OCTOBER 1999

Macworld

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Meet the iBook

Secrets of the iBook, Including:

- Wireless Networking
- Hidden Features
- Exclusive Details

Macworld

Incorporating MacUser

Features

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*Photography by
Lisa Quinones/Black Star*

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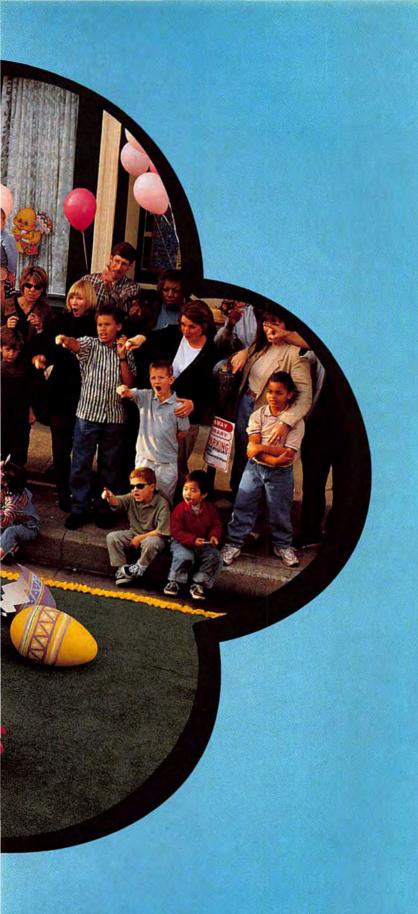
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Letters

Worthy Challenger

I WAS VERY INTERESTED IN YOUR comparison of the iMac and a PC ("The iMac Challenge," July 1999). I am certified on various Microsoft products, including Windows 95, and I have been considering purchasing a Mac. I am well aware of the strengths of the Macintosh in graphic design and audio editing. By adding a Mac to my collection, I think I would have the best of both worlds—familiarity with the PC along with the usability of the Mac.

Your comparison, although geared more toward the first-time user, was quite informative and honest, and I was more interested than ever in purchasing a Macintosh after reading it. The 266MHz iMac's performance versus that of the 366MHz PC impressed me the most. I don't know if a G3 is comparable to a Celeron as opposed to a Pentium II, but nevertheless, the numbers are impressive.

JASON A. DANIELS
Cape Coral, Florida

ALTHOUGH I AM REALLY NOT THE iMac's target buyer, I was very interested in *Macworld*'s iMac-versus-Gateway-PC tests. There was a great deal of valuable information in the article, and I hope both Apple and the PC manufacturers pay attention to it. Although the tests were well organized and thoughtful, there was one crucial element missing: finding out what happens to these users after they spend a month using each computer.

Consider a few more tests that would really point out the Mac's superiority, which is in consistency. For example, have users install a new software application and then launch and use that application. Or add a peripheral device to the computer, configure it, and use it. Now add another peripheral of a different kind, configure it, and use it.

In these more everyday tests, the Mac is far superior to the PC because everything behaves pretty much the same. Menus (such as File and Edit) are always there and always contain certain items. Peripherals are generally straightforward and have similar installation processes, and most programs work basically the same way—even very different programs such as graphics and word-processing applications.

JOHN L. KUNDERT-GIBBS
Asheville, North Carolina

Due to time constraints, we were unable to document the users' long-term experiences. We hope in the future to chronicle iMac and PC users' experiences over a longer period of time.—Ed.

I N "THE iMAC CHALLENGE," YOU forgot one important test—the Mom test. Which kind of computer would you rather have your mother buy, given that you will act as the technical-support person for the life of the machine?

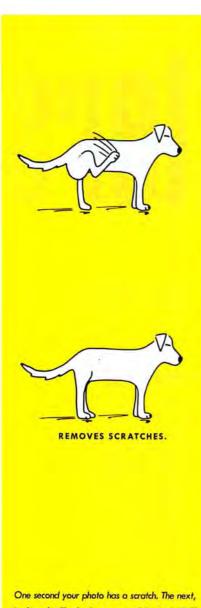MATT BALL
Pittsburgh, Pennsylvania

Up in Arms over OS X Server

MACWORLD HAS REALLY LOST ITS way! You conduct a review of Mac OS X Server (*Reviews*, July 1999), including a graph with the dooming headline "As a Web Server, OS X Lags," and give OS X Server a low mark for "mediocre performance for file and Web serving." Then at the end you mention that the comparison was to a large-scale, multiprocessor NT server and that a smaller NT-server configuration comparable to the Mac tested wasn't available at press time. That's not exactly comparing Apples to apples, is it?

This first-generation Mac OS X Server may not be the server of choice for huge transaction-intensive sites yet. However, those sites are not the majority on the Web. For the more common small-to-medium-size sites and intranets for labs, classrooms, and small graphics shops where networked media is important—the traditional core of the Macintosh user base—OS X Server is a superior product. And OS X Server is not built on a house of cards, as is Windows NT, with its bloated code that dooms it to technological extinction. Clearly this clean offering created on a solid code foundation from a proven technology leader has a much brighter future than NT, and a publication that cared about its readers' pocketbooks would recommend it.

LAUREL KASHINN
Grafton, Wisconsin

continues

DAVE CUTLER

To *clarify our test configuration for the Mac OS X Server review: both the NT server and the Solaris server were dual-processor systems. We feel comparing Mac OS X Server to these configurations is reasonable, because dual processors are considered standard for businesses concerned with Web-server performance.*

For more opinions on OS X Server's suitability in offices and labs, see our continuing coverage at www.macworld.com/1999/10/opinion/letters/osx.html.—Ed.

Palm Reading

YES, PALM'S ORGANIZERS ARE NICE machines ("You *Can* Take It with You," July 1999), but getting them to work with non-infrared–equipped Macs is a huge and costly pain. I'm surprised David Pogue didn't directly mention this. *Macworld* ought to let people know that the cost of attaching a Palm to a new G3 is not just $6 for a serial cable but more like $76, because a $70 USB-to-serial adapter is required to connect the cable to the machine.

We already know that Apple has no interest in providing support for so-called outdated connectors. Apple's decision to decommission serial ports, SCSI ports, and floppy drives is a special kind of tyranny, one so poorly conceived that the folks in Redmond wouldn't even try it.

DAVID MENDONCA
Troy, New York

According to recent reports, 3Com/Palm Computing will release a USB cradle at some point, although no date has been set. In the meantime, we agree with David's point and advise you to factor in the extra cost if you're considering getting a Palm.—Ed.

Worth the Cost

NORMALLY I AGREE WITH *Macworld*'s reviews, but not in the case of Newer Technology's BookEndz (*Reviews*, July 1999). I own one, and I am glad I do. I frequently take my PowerBook out of the office, and BookEndz makes everything so much easier—I turn off the machine, and I'm out of there. When I return, I pop the PowerBook back in place, and I'm ready to go to work. BookEndz has alleviated the problem of loose wires falling down behind my computer table, eliminating a lot of hassle. It also reduces the risk of bent connectors in the

plugs. True, the product may be pricey, but it is worth the investment for those of us who treat a PowerBook like the portable it is designed to be.

BOB WALL
Seattle, Washington

Invigorated!

DORI SMITH'S ARTICLE "INVIGorate Your Site with JavaScript" (*Create*, July 1999) sure hit the spot! I've never needed, nor had any interest in getting into, any programming language, but I did want to get more interactivity in my Web pages. Tweaking Smith's script to work on my page gave me flashbacks of those old thrills I used to get from working on a HyperCard stack on my Mac. As part of the tweaking, I added 0.2 inch to the bottom of each image. I placed the title of the image in this space. This way you get the title of each image in the slide show. Now I have a whole new world to explore. Thanks.

HAROLD OLEJARZ
Tenafly, New Jersey
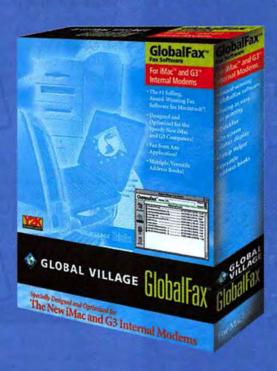
A Write-Protect Conspiracy

FINDING OUT THAT MICROSOFT has its own unique value system is a rite of passage for most computer professionals, not unlike your first, er, kiss (*The Desktop Critic*, July 1999). In my own case, I recall a client a few years back who called about installing Microsoft Word on a Macintosh with a suspect floppy drive. The drive could read just fine but was known to destroy data when used for writing. "No problem," I said, "simply set the write-protect tab on the installation disk, and you should be OK." Nope—Mr. Gates and Microsoft obviously didn't see it that way. During installation the software wrote registration information to the disk anyway, bypassing the tab and ultimately ruining the data. Silly me—after all, the tab was really only an industry convention. If you are bound and determined to ignore it, of course you can. That was some years ago. These days, it seems, Microsoft is ignoring a lot more than the write-protect tab on a floppy.

B. APPEL
Toronto, Ontario, Canada

continues

Keys to the Game

AFTER READING CHRISTOPHER Breen's column on Virtual Game Station (*The Game Room*, July 1999), I felt inferior because I am a keyboard junkie. As a die-hard gamer, I play every game I can get my hands on, and after using a game pad I borrowed from a friend, I vowed never to use one again. With a computer, you get more-advanced games with more-advanced controls. Trying to break today's game controls down to eight buttons is impossible. If you don't believe me, try playing Starsiege: Tribes, where only a keyboard in combination with a mouse can lead to victory.

ALEX MEASURES
Arlington, Massachusetts

Stretching the Metaphor

IF BILL GATES IS DARTH SIDIOUS and Microsoft is the evil empire, then we Mac users must be the Rebel Alliance. And that makes Steve Jobs, who? Obi-Wan?

Flash back to October 1997, when Steve Jobs said, "We have to let go of the notion that for Apple to win, Microsoft has to lose. The competition between Apple and Microsoft is over as far as I'm concerned." Microsoft then bought $150 million in Apple stock. So maybe Steve Jobs is really Anakin Skywalker, and if you know your *Star Wars* episodes, you know who he becomes.
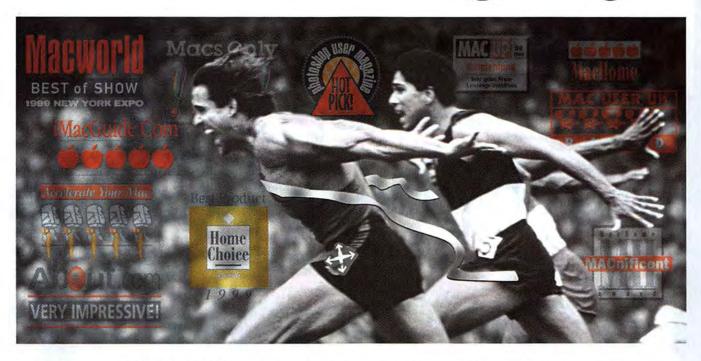
TOM ELESON
Sidney, Montana

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C O R R E C T I O N S

Contrary to our statement in the sidebar "Speech Recognition Returns to the Mac" in "The Millennium Mac" (August 1999), Dragon Systems' NaturallySpeaking products range in price from $60, for Dragon NaturallySpeaking for Teens, to $1,000, for Dragon NaturallySpeaking Legal Suite. **m**

The Vision Thing

by Andrew Gore

No Strings Attached

THINK THE iBOOK IS IMPRESSIVE? WAIT TILL YOU UNPLUG IT.

NEW YORK—ANOTHER Macworld Expo, another groundbreaking product announcement from Steve Jobs. Apple's performance at its major media events has become so predictably unpredictable that it's a wonder Steve doesn't just phone in the keynote from home.

The iMac, the blue-and-white Power Mac G3, and now the iBook—Apple just keeps knocking them over the fence. And while nothing is ever perfect, the iBook comes pretty darned close. It's relatively cheap and surprisingly fast, offers a good set of features, and has a beautiful design—at first glance, you immediately notice that it looks exactly like a portable iMac should. If ever a product was born to be a runaway best-seller, this is it. The only question that remains is, how will people get their data on and off their iBooks? And that's a debate we've all heard before, with the iMac.

iBook and Verse

To me, the biggest thing about the iBook announcement was not the iBook itself. Don't get me wrong—I'm not blasé about Apple's darling portable. (I hesitate to call the iBook *little*—it's actually larger and, at 6.6 pounds, heavier than the new bronze PowerBook G3.) The price—$1,599—isn't rock-bottom, but it certainly is impressive given the power in this tangerine or blueberry package.
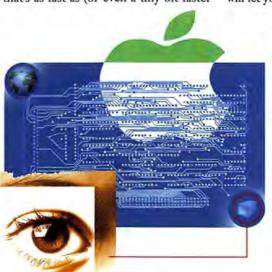
And while they're far from the iBook's top-level features, its little details make all the difference. For example, a spring-loaded handle lets you carry it easily; a latchless cover opens and closes like that of a jewelry case; and a power cord actually includes a cable wrap, so that you don't have to stuff a wadded-up ball of wire in your bag.

The iBook should especially appeal to students and anyone else who needs an easy-to-use portable computer that doesn't cost an arm and a leg . . . and who appreciate style in their products. There's no doubt that the MTV generation will get the most out of this notebook's great mixture of style and substance.

But like I said, none of this covers the iBook's most important feature.

The Golden Age of Wireless

The most visible difference between the iBook and all other portable PCs is something as invisible as the air—AirPort, Apple's wireless networking product. Imagine, if you will, setting up a network that's as fast as (or even a tiny bit faster than) 10BaseT networking without having to run any cables. Or even more impressive, imagine surfing the Net from your high-speed home DSL line while plucking cherries from the tree in the backyard. (Our tree turned in a bumper crop this year, so I spent a lot of time picking cherries this summer.)

If you're like me, you've got a house that's full of computers and full of computer users but only one connection to the Internet—in my case, DSL. Your options? Get down and dirty in your attic or crawl space running wires throughout your house, use HomePNA (a networking system that piggybacks on your existing telephone wiring), or go wireless. Up until now, wireless networking has been far too expensive for most people and hasn't been particularly Mac-friendly. But the AirPort and its $299 Ethernet-friendly base station change things—not just for the iBook, but for all Mac users.

Already Farallon has announced a $299 wireless networking PC Card, compatible with the AirPort, that will give older PowerBooks the ability to roam freely at Ethernet speeds. And it's only a matter of time before other hardware appears that will let you connect deskbound computers in far-flung parts of your house without getting up close and personal with the fiberglass insulation in your ceiling.

iBook 'Em, Dan-o

Does the iBook rid the world of Ethernet? Probably not—Ethernet cables and hubs are cheap, and Ethernet ports are built into every Mac, including the iBook. But the iBook does usher in a world where wires are no longer mandatory—and where portable computers can roam free without giving up the Internet, one of the biggest reasons we use computers.

As more and more people attempt to bring their pre-Internet households into the networked age, and as more schools have students taking their computers with them to class, the importance of wireless networking will be paramount. And it looks like Apple's beaten everyone to the punch.

So where's the AirPort for my Power Mac? I've got computers to connect, and I don't think I can bear to use my crawl space now that I live in a world with the iBook in it. ▥
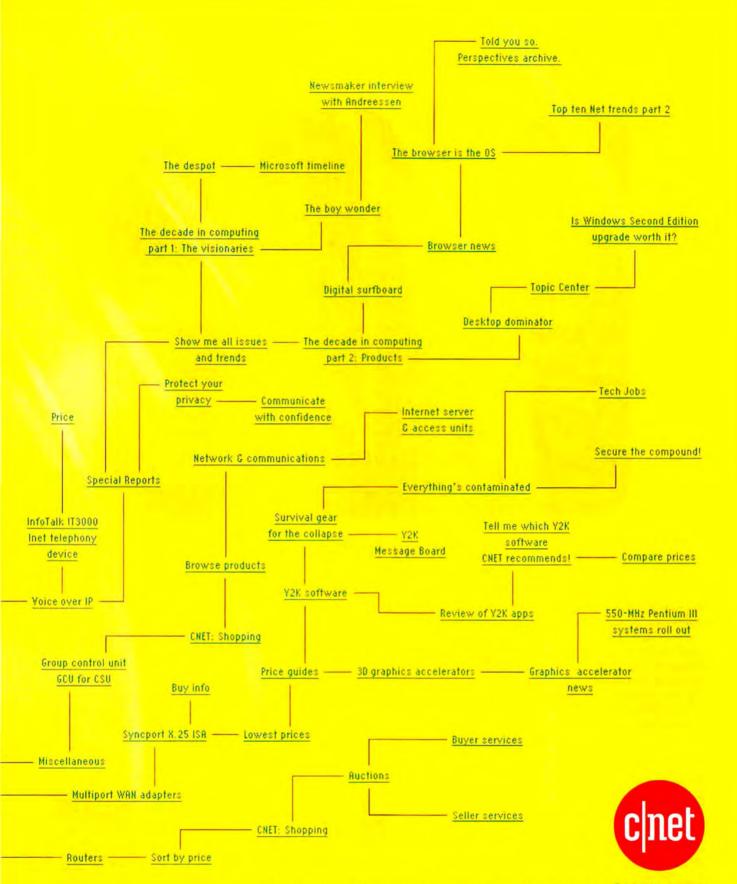
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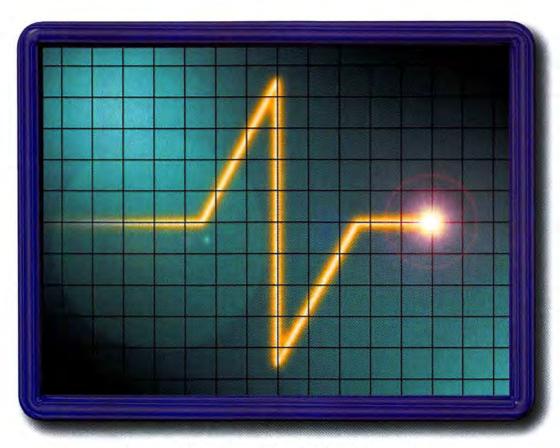
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News

Microsoft Preps Web-Software Upgrades

OUTLOOK EXPRESS NOW TIES INTO MSN HOTMAIL SERVICE

by Stephen Beale

Microsoft, speeding along in Internet time, is preparing to release upgrades to its flagship Web programs—Internet Explorer and Outlook Express—less than a year after the last major revisions of the software. Outlook Express 5.0, an upgrade to Microsoft's free e-mail client scheduled for release this fall, is further along in the development cycle, but the company is also previewing features slated for Internet Explorer 5.0. For iMac and iBook users, the company has announced a promotion in which it will offer a consumer edition of Microsoft Word 98 for $99.

A New Outlook Major new features in Outlook Express 5.0 include an easy-to-use junk-mail filter, a new contacts database, built-in synchronization with 3Com's Palm Organizer, and a raft of interface improvements.

The new antispam filter applies a variety of algorithms designed to screen out unsolicited e-mail messages. Using a slider control, you can determine the filter's sensitivity: as you slide to the right, the filter screens out a higher number of messages.

Interface enhancements include the InfoBar, which lists other e-mail messages within the current message thread, and a new window for viewing attachments. New buttons in the preview pane let you increase the font size and apply AutoText cleanup, which rewraps text and corrects for common formatting problems. A new flag feature lets you tag unread messages for later scrutiny.

The program's Address Book lets you define up to eight custom fields for each record, in addition to the standard name, address, and phone-number fields. As in version 4.5, you can use the Address Book to feed data to Word 98's mail merge feature.

When you create a new outgoing message, the new Address AutoComplete feature automatically displays a list of e-mail addresses from the Address Book. As you type in letters, the list automatically updates to display records that match the character string.

A new Mailing List Manager lets you sort messages from specified addresses into user-defined folders. And you can schedule the program to download mail at certain times.

The upgrade also provides a direct tie-in with Microsoft's Hotmail, a free Web-based e-mail service. Instead of going to the Hotmail Web site to *continues*

ONCE AGAIN, THE EDITORS OF *Macworld* have selected the hottest new products introduced at Macworld Expo. The awards are open to products announced at, or shortly before, the trade show. We also had to see the products in action, although some evaluations were based on prototypes or beta versions.

EPICTURE
BeatWare (650/556-7900, www.beatware.com) offers up a full-featured tool for creating Web graphics and animation.

iBOOK/AIRPORT
The new consumer laptop looks like another hit for Apple (800/795-1000, www.apple.com). And Apple's AirPort technology brings industry-standard wireless networking to the iBook at an affordable price.

LIVESTAGE 2.0
Totally Hip Software (604/685-6525, www.totallyhip.com) has improved the script-building capabilities of its QuickTime authoring program.

MACH CARRIER UPGRADE
This G3 accelerator from XLR8 (888/957-8867, www.xlr8.com) makes it easy to keep current with processor upgrades by letting you replace the chip when faster versions are released.

MADDEN 2000 FOOTBALL
Aspyr Media (512/708-8100, www.aspyr.com) gives us the first team-sports game for the Mac. Hopefully others will follow.

MICROSOFT OUTLOOK EXPRESS 5.0
The latest version of the free Microsoft (425/882-8080, www.microsoft.com) e-mail client

offers an improved interface, an easy-to-use junk-mail filter, and direct access to Hotmail accounts.

MULTIPASS C635
The first multifunction peripheral for the Macintosh, the MultiPass C635, from Canon (800/652-2666, www.usa.canon.com), combines printing, scanning, and stand-alone copying and faxing capabilities.

SKYLINE WIRELESS NETWORK CARD
This PC Card from Farallon Communications (510/346-8001, www.farallon.com) brings industry-standard wireless-networking capabilities to the PowerBook G3.

STUDIO ARTIST
This innovative "graphics synthesizer" from Synthetik Software (415/864-6582, www.synthetik.com) offers a new metaphor for painting software. With it, you can create your own paint tools by modifying any of 200 parameters.

RIO PMP 500
RioPort (408/325-7000, www.rioport.com) finally gives the Mac its due with the first Mac-compatible MP3 player.

SOUNDJAM MP
New from Casady & Greene (800/359-4920, www.casadyg.com), SoundJam is the first Mac software that encodes and plays back MP3 titles. It's bundled with the Rio PMP 500, but you can also use it without an MP3 player.

People running auction sites will probably have mixed feelings about this feature: it will make the sites easier to use but will also reduce traffic and, with it, ad revenue. (Microsoft does not have an auction site of its own.)

Consumer Word Along with the forthcoming Web software, Microsoft has announced a special promotion under which it will offer a consumer edition of Microsoft Word 98 for $99 ($129 with a $30 rebate). Word 98 Special Edition for the iMac and iBook includes a full version of Word 98, along with clip art, greeting-card templates, and sample card paper. The software license specifies that the software can be run only on Apple's iMac and iBook, but no proof of purchase is required. It's a great deal, considering that Word 98 retails for $249 and an upgrade from previous versions costs $149. The promotion is good through January 31, 2000.

Get Ready for QuickTime TV

APPLE ANNOUNCES A STREAMING-VIDEO WEBCAST NETWORK

by Stephen Beale

Could a new media empire be brewing in Cupertino? At the recent Macworld Expo in New York, Apple announced QuickTime TV (QTV), a network that delivers live video and audio over the Internet. An extension of the streaming-video capabilities in QuickTime 4, QTV lets you tune into con-

send or receive mail, you can access Hotmail accounts from within the e-mail client. However, the new junk-mail filter won't screen out messages sent to Hotmail accounts.

The Hotmail tie-in could be considered a bold—or perhaps arrogant—move, since the company is clearly using its Web software to give a competitive advantage to one of its Web properties. Microsoft's ability to leverage

its software assets was a central issue in the recent Justice Department antitrust case.

New Explorer Microsoft is providing only a few details about Internet Explorer 5.0. The upgrade will support the latest round of Web standards, including Cascading Style Sheets 2.0, and will rely exclusively on Apple's Macintosh Runtime for Java to interpret Java applets. Microsoft announced last year that

it would abandon its own Mac-based Java interpreter in favor of Apple's.

The software will also include the Auction Manager, which tracks transactions on eBay and other popular auction sites. Instead of going to the Web site to check new bids or the auction's closing time, you can instruct the browser to play a sound, display an alert, or send an e-mail message when activity occurs.

tent from ABC News, Disney, BBC World, ESPN, HBO, and other well-known media outlets. Some content providers, such as HBO, are providing previews of movies and other attractions available through their premium services. Others, such as Fox News, provide live feeds of their cable broadcasts.

Mac and Windows users can access QTV channels by using the Favorites feature in the new QuickTime Player. For example, clicking on the BBC channel in the Favorites drawer brings up a BBC newscast.

Along with Apple's QuickTime software, the network also uses content-delivery technology from a Cambridge, Massachusetts–based company called Akamai, which maintains a global network of high-speed Web servers. By distributing audio and video streams through the Akamai network, Apple says it can dramatically speed the delivery of QTV content.

Media Mogul? So is Apple following Microsoft's footsteps and getting into the media business? Not exactly, says Apple Product Marketing VP Phil Schiller. Apple's goal, he says, is not to launch a new business venture but to promote QuickTime's streaming-video capabilities.

He also makes it clear that QTV won't compete with the broadcast and cable networks; after all, even the best-looking Web video can't match the quality and frame rate of broadcast video. However, thanks to QuickTime's scalability, he says, it will be easy for content providers to improve video quality as Internet bandwidth increases. With QuickTime 3, Apple introduced the ability to stream QuickTime movies at different data rates, depending on the speed of the user's Internet connection.

SUZANNE ROADY

Solid-Ink Printer Gets iMac Look

iMAC-INSPIRED INDUSTRIAL DESIGNS ARE SHOWING up in all kinds of unexpected places. The latest company to jump on the blue-and-white bandwagon is Tektronix (800/835-9433, www.tek.com), which has released a new version of its Phaser 840 solid-ink printer. The Phaser 840 Designer Edition features a built-in 10/100BaseT Ethernet port and provides 1,000-dpi letter-size output at six pages per minute in standard-color mode.—MACWORLD STAFF

Personal–Info Managers Go Online

WEB SITES OFFER FREE
PIM, E-MAIL SERVICES

by Macworld staff

Two Web sites are enticing Mac users with an array of free services, some of which duplicate features found in simple personal-information–management applications. Magically (www.imagicaldesk.com) and Zcentral (www.zcentral.com) offer free Web-based e-mail, data storage, address books, multiuser calendars, and other services. Both let you exchange documents with other users by placing files on FTP servers.

Magically, which offers 5MB of free storage space, provides access to its features through a customizable virtual desktop that includes links to Mac-related Web sites. You also get a Sherlock plug-in for searching e-mail messages and other content. The company earns revenue by offering premium services, such as a $5-per-month MagicalViewer application that lets you view files in a wide variety of formats even if you don't have the host software. You can also pay for additional storage or e-mail accounts.

Zcentral, which earns revenue through advertising and cobranding deals, provides 20MB of free storage space and an address book that automatically updates itself if other registered users change their contact information. Mac Publishing, the publisher of *Macworld*, has signed an agreement to offer Zcentral's services through Mac Publishing Web sites, which include Macworld Online, Macweek.com, Mac Central, iMacworld, and MacBuy.

More Pixels for New Kodak Cameras

NEW MODELS BREAK THE
TWO-MEGAPIXEL BARRIER

by Macworld staff

Fast on the heels of archrivals Nikon and Olympus, Kodak (800/235-6325, www.kodak.com) has introduced three new digital cameras, including its first models to surpass a resolution of two megapixels.

Leading the new product line is the DC290, a $1,099 point-and-shoot camera with a 2.1-megapixel CCD—capable of producing images at a resolution of up to 1,760 by 1,168 pixels. Other features include 3× optical zoom, external flash synchronization, audio recording and playback, and a single connection that serves as a serial or USB port. The camera stores images on a 20MB Compact-Flash card. An accessory allows use of standard 37mm threaded lenses.

The camera uses the Flashpoint Digita operating environment, which includes a scripting language that lets you control image-capture functions. One script allows the camera to accept data from a global-positioning–satellite receiver. The camera, attached by a bracket to the receiver, automatically labels each shot with the time and location. *continues*

Kodak sells a $2,000 bundle that includes the camera, receiver, bracket, and cable.

The $799 DC280 features the same 2.1-megapixel resolution as the DC290, but with a 2× optical zoom and no Digita software.

Kodak has also introduced the DC215, a compact $399 camera with 2× optical zoom and a megapixel sensor capable of capturing images at 1,152-by-864-pixel resolution. The camera connects to serial ports (no USB) and stores images on a 4MB CompactFlash card. The $499 gold version features an 8MB Compact-Flash card and a USB CompactFlash reader.

Along with these new cameras, Kodak has also announced the DC240i, a version of its $599 DC240 with an iMac-inspired industrial design. Kodak has not announced pricing for the iMac version.

Kodak will continue to sell its DC265, which features a 1.6-megapixel CCD, at a new price of $899. However, the company has discontinued the DC210, DC220, and DC260.
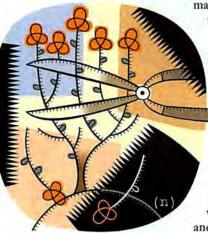
MetaCreations on a Diet

DEVELOPER SELLS
CONSUMER-SOFTWARE
LINE TO SCANSOFT

by Stephen Beale

Just a few months after seeing the departure of Kai Krause, MetaCreations (805/566-6200, www .metacreations.com) has sold off three consumer programs that bore the flamboyant executive's name: Kai's Super Goo, Kai's Photo Soap, and Kai's Power Show. Scan-Soft (978/977-2000, www .scansoft.com) will add the programs to its line of text-recognition and digital-imaging software, which includes TextBridge Pro and Paper-Port Deluxe. MetaCreations

(n)

will handle support for the three consumer products through the end of the year.

ScanSoft says it paid $2.6 million and assumed up to $950,000 in liabilities to acquire the products. Meta-Creations could earn up to $1 million more in financial-performance–incentive payments. MetaCreations says there will be no layoffs as a result of the sale.

Time of Changes The sale of the three products is part of an ongoing transition for the software publisher, which has changed its tag line from "The Visual Computing Software Company" to "The Creative Web Company."

MetaCreations says that it will now focus on 2-D and 3-D applications for graphics professionals. The company recently released Canoma, a program for creating 3-D scenes from still photographs, and Poser 4, a new version of its 3-D character-animation software. MetaCreations has also begun selling individual Photoshop plug-ins through its Web site.

The company plans to release a patch later this year for its Bryce software that will let you incorporate animated Poser characters into Bryce landscapes. MetaCreations has also been demonstrating a forthcoming under-$200 plug-in that will add automatic lip-syncing capabilities to Poser: when you play a voice track, the plug-in causes the character's mouth to move in a natural manner.

Informal Alliance The company is following the same path taken by Macromedia, which hit troubled financial waters two years ago and then underwent a transition in which it focused on Web authoring tools and shed such noncore products as Xres and Extreme 3D. Indeed, it appears that Macromedia has forged an informal alliance with MetaCreations, which had a major presence at the recent Macromedia User Conference. Despite their common focus on Web-graphics applications, there is almost no overlap between the companies' product lines. Macromedia CEO Rob Burgess and MetaCreations CEO Gary Lauer are both Silicon Graphics veterans.

MetaCreations has also announced MetaStream.com, a joint venture with Computer Associates aimed at promoting the former's MetaStream 3-D Web technology. The new venture, to be headquartered in New York City, will license MetaStream software for use in e-commerce applications and will also provide development services. Robert Rice, MetaCreations' former vice president of strategic affairs, will head the joint venture.

IBM to Deliver Mac ViaVoice

BIG BLUE JOINS DRAGON
SYSTEMS, MACSPEECH
WITH SPEECH SOFTWARE

by Macworld staff
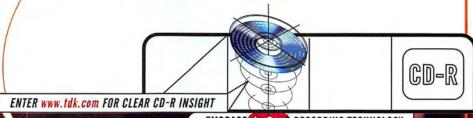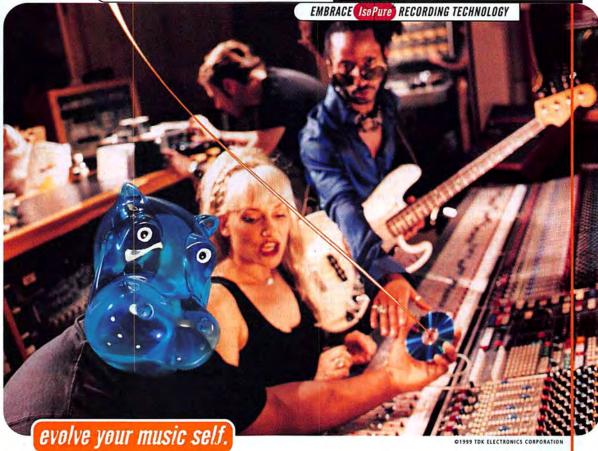
Mac-based speech-recognition technology has taken another leap forward with IBM's July announcement that it will offer a Mac version of its ViaVoice dictation software. IBM joins Dragon Systems and MacSpeech in announcing plans to deliver continuous-speech–recognition technology for the Mac (see the "Speech Recognition Returns to the Mac" sidebar in "The Millennium Mac," August 1999). IBM says it will release the software later this year.

IBM representatives demonstrated an early version of the speech-recognition program at Macworld Expo New York. Although the software will be based on IBM's current Windows offerings, an IBM spokesperson says the company has not yet decided on a price or on which specific features to include.

ViaVoice and Dragon's NaturallySpeaking both use continuous-speech–recognition technology. Older speech-recognition products required discrete pauses between words. Continuous-speech–recognition technology lets you speak in a more natural manner. Reviews of PC versions of the two packages have generally given the nod to NaturallySpeaking, citing its high recognition accuracy. MacSpeech, a new company, does not have a PC voice-recognition product.

JEFF NEUMANN

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EMBRACE *IsoPure* RECORDING TECHNOLOGY

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Reviews

17-Inch CRT Monitors

IIYAMA AND APPLE

DISPLAYS STAND OUT IN

MEDIOCRE BUNCH

THE BIG MONITORS USED BY graphics designers are great if you can afford them, but most of us need a more cost-effective way to get the job done. For most tasks—especially Web surfing, gaming, and general business applications—a 17-inch display fills the bill.

Macworld Lab put six 17-inch CRT monitors—Iiyama's Vision Master Pro 410, MGC Technologies' MGC-790, NEC Technologies' MultiSync E750, Optiquest's Optiquest V75, Philips Consumer Electronics' Philips 107MB, and ViewSonic's ViewSonic GF775—through their paces. The monitors, all priced under $500, are designed for use at 1,024-by-768-pixel resolution, but they support higher resolutions as well.

We tested each monitor against our reference model, Apple's $499 Studio Display (♦♦♦; *Reviews*, May 1999), paying particular attention to sharpness; color accuracy; and image quality at high resolution. Although most of the monitors offer acceptable quality, none matched the reference model.

Shadows and Slots

The Iiyama and Apple displays use aperture-grille technology, in which thin vertical wires direct electrons to the screen. The Philips, Optiquest, and MGC mon-

itors use shadow-mask technology, in which closely grouped holes align the electrons. The ViewSonic and NEC displays employ a new technology called *slot mask*, in which electrons pass through rectangular or elliptical openings.

NEC claims that its ChromaClear slot-mask design, which uses elliptical holes, increases the range of colors a monitor can display. However, in our testing, the two aperture-grille monitors surpassed the slot- and shadow-mask tubes.

The Iiyama and ViewSonic monitors feature flat screens, which tend to

reduce glare and eliminate distortion at the display's edge. However, flat screens are not necessarily better than the curved ones found on most CRTs: the Iiyama display scored high marks for display quality, but the ViewSonic monitor failed to stand out from the pack.

A Sharper Image

If you plan to spend much of your time staring at words and/or numbers on screen, you'll want a monitor that's capable of displaying sharp text. To test sharpness, we opened a large Microsoft

ARNOLD TIOSEJO

Excel spreadsheet with each display set to 1,024-by-768-pixel resolution. We viewed long columns of numbers, plus white text on a black background; the latter often reveals sharpness problems you won't notice with black text. To ensure consistency, we set each monitor's contrast to maximum and adjusted the brightness on a test image to create a dense black without loss of gray detail.

Of the six monitors we tested, only Iiyama's Vision Master Pro 410 scored a high sharpness rating. Thanks in part to the flat CRT, the numbers appeared extremely crisp all over the screen, including the corners, where you would expect any blurriness to be most evident.

Although none of the other displays exhibited outstanding sharpness, all of them were acceptable. However, the MGC-790 blurred reverse text and deformed numbers at the edge of the screen. Reverse text on the Philips monitor was also hard to read, mostly because the display was too bright.

These displays are best used at 1,024-by-768-pixel resolution, which assures that text and images are shown at their actual size. There may be occasions, however, when you'll want a higher resolution—even if it reduces 12-point type to the size of classified-ad copy.

To see how the monitors held up, we cranked the resolution of each to 1,600 by 1,200 pixels and viewed an image in Adobe Photoshop, paying particular attention to the program's palettes. Predictably, on-screen text at the higher resolution was difficult to read on all six displays. However, reading the palette names was especially tough on the MGC

and Philips monitors. The other four monitors' sharpness was acceptable—we had to squint a little, but we were able to navigate through the palettes.

Get the Color Right
Although none of these monitors are meant for color proofing or other high-end graphics work, you don't want to view a vacation photo and wonder why the Black Sea looks so red. To evaluate color accuracy, we viewed a Photoshop test image on each display at 1,024-by-768 resolution.

None of the monitors matched the color-reproduction capabilities of Apple's Studio Display. The MGC-790 was the most disappointing: a white background displayed as light blue, and blacks and browns were faded. The Optiquest and ViewSonic displays rendered reds with a bluish cast, and the ViewSonic also suffered from faded colors. Even the Iiyama monitor, which otherwise scored well in our tests, could not quite match the deep red hues of the Apple display.

The Philips and NEC monitors scored low marks on color reproduction, primarily because they're too bright. Generally, you want a monitor capable of high brightness levels to compensate for direct sunlight. However, both displays go too far in this respect. Even when we lowered the brightness setting, colors appeared washed-out. The other monitors have acceptable brightness levels.

All of the monitors we tested offer controls—buttons, wheels, or some combination thereof—that let you navigate through the on-screen menu system. You can use these controls to adjust brightness, contrast, scaling, horizontal and

vertical positioning, and other settings.

The MGC display uses a notched wheel, which we found works better than the ViewSonic and Philips monitors' smooth wheels. The notched wheel makes it easier to adjust settings in fixed increments; the smooth wheels tend to cause large jumps in values. The other displays use button controls.

When you're adjusting brightness or other settings, all the monitors display a bar that shows how much you've changed the value. However, the Optiquest, Philips, and MGC monitors also show numeric values, allowing for more-precise adjustments.

Being Macintosh-display workhorses, these 17-inch monitors don't offer many frills. None include USB hubs, and only the Philips monitor has built-in speakers. And because these monitors are sold to PC as well as Mac users, none feature a truly cutting-edge industrial design: it's boxiness and opaque beige all around.

Macworld's Buying Advice
Among the 17-inch monitors in this roundup, only Iiyama's $469 Vision Master Pro 410 stands out as a top-notch display. It's reasonably priced and offers excellent sharpness and decent color reproduction. If price is your main concern, check out the Optiquest V75, which offers acceptable color and sharpness for less than $400. However, your best bet remains our reference model, Apple's $499 Studio Display; it offers the best sharpness and color reproduction, not to mention an iMac-inspired industrial design that will look right at home next to your blue-and-white Power Mac G3.—MICHAEL GOWAN

17-Inch Monitors Compared

Company	Product	Mouse Rating	List Price	Contact	Pros	Cons
Iiyama North America	Vision Master Pro 410	♦♦♦♦	$469	800/394-4335 www.iiyama.com	Excellent sharpness.	Colors a bit faded.
MGC Technologies	MGC-790	♦♦½	$349	877/428-9642 www.mgcusa.com	Least-expensive monitor in roundup.	Poor color accuracy; poor sharpness at high resolution.
NEC Technologies	MultiSync E750	♦♦♦	$449	800/632-4636 www.nectech.com	Acceptable sharpness.	Extreme brightness reduces color accuracy.
Optiquest	Optiquest V75	♦♦♦½	$399	800/843-6784 www.optiquest.com	Good price; acceptable sharpness.	Colors appear faded.
Philips Consumer Electronics	Philips 107MB	♦♦♦	$419	800/531-0039 www.philipsmonitors.com	Acceptable sharpness; includes speakers.	Extreme brightness reduces color accuracy; poor sharpness at high resolution.
ViewSonic	ViewSonic GF775	♦♦♦	$475	800/888-8583 www.viewsonic.com	Acceptable sharpness.	Colors appear faded.

QuickTime 4 Pro

MULTIMEDIA SOFTWARE ADDS TRUE STREAMING AND
A GIMMICKY PLAYER

TWO STEPS FORWARD, ONE STEP back—that about sums up version 4 of QuickTime, the system software that enables Macs and Windows computers to work with dynamic media such as audio, video, and virtual-reality panoramas. The new version brings significant improvements in almost every area: it's easier to download, adds support for MP3 audio files and Macromedia Flash animations, offers smoother panning and sharper display of panoramas, and supports streaming—the ability to play QuickTime content as it downloads. Unfortunately, QuickTime 4's appeal is diminished by the gaudy, cumbersome interface of QuickTime Player, the bundled program most people will use to play back QuickTime content.

As it did with version 3, Apple distributes two flavors of QuickTime 4. We tested the $30 QuickTime 4 Pro, which adds authoring features that let you convert from one format to another, perform basic editing, and save downloaded QuickTime movies to your hard disk. A free version that handles playback only is also available.

Installation à la Carte

QuickTime was putting on more weight with each new version, and version 3's installation program weighed in at more than 7MB. To ease QuickTime 4's download burden, Apple added a new installation program that lets you download just the QuickTime components you need.

At a relatively svelte 400K, the installer downloads quickly. The minimal installation is roughly 2MB and handles most QuickTime media (but, alas, not Quick-Time VR). If you need additional features, the QuickTime Updater utility will grab the new components. Select everything, and you're back to a 7MB download. Thankfully, QuickTime 4 should be available on CD-ROM by the time you read this; pricing hadn't been announced at press time.

Into the Stream

With version 4, QuickTime joins Real-Networks' RealSystem G2 and Microsoft's Windows Media Technologies in

providing true streaming—the ability to broadcast live events or radio and TV feeds over the Internet or intranets, along with the ability to stream on-demand movies more reliably than with previous versions. But QuickTime streaming is new, and there isn't all that much to listen to or watch just yet.

From a media producer's standpoint, QuickTime has some advantages over the aforementioned competitors when it comes

The Player That Shagged Me QuickTime 4 Pro's QuickTime Player may look cool at first glance, but its volume control, Favorites drawer, and other features are a user-interface nightmare.

to streaming. But it also falls short, particularly compared to RealSystem G2. For example, although QuickTime 4 streaming lets you support multiple connection speeds, doing so is far more difficult than with RealSystem G2. (For details on producing QuickTime streaming content, see "Master Streaming with Quick-Time 4," *Create*, in this issue.)

In promoting QuickTime streaming, Apple's Web site says that "unlike competing products, QuickTime streaming requires no per-stream charge." That claim is aimed directly at RealNetworks,

which prices its server software based on how many simultaneous streams you want to deliver. For example, a 40-stream Real-System G2 server costs $695. From there, prices quickly skyrocket into the four-figure range. Apple's QuickTime Streaming Server, by comparison, is included with Mac OS X Server and can dish out up to 2,000 simultaneous streams.

Still, Apple's claim is only partially true: RealNetworks does offer a free version of its RealSystem G2 server that supports 20 simultaneous streams—fine for a low-budget operation. RealNetworks' servers also have much lighter hardware requirements than Mac OS X Server's.

Not So Groovy, Baby

Most users will play streaming Quick-Time content with the new QuickTime Player, which replaces the venerable MoviePlayer program that accompanied previous QuickTime versions. QuickTime Player adds some welcome improvements, including bass and treble controls for tweaking the sound quality to your taste. It can also play MP3 audio files, although it doesn't support playlists and can't play back files compressed with variable–bit-rate encoding.

MoviePlayer was an austere affair, but QuickTime Player wouldn't look out of place in Austin Powers's pad. A brushed-aluminum look evokes a sixties hi-fi set, but the bright finish makes small movies appear too dark. Worse, the new Favorites "drawer," which lets you bookmark movies and streams, is poorly designed.

Macworld's Buying Advice

QuickTime Player is an interface-design disaster, but the QuickTime 4 foundation upon which it rests is rock-solid. If you use QuickTime extensively, by all means upgrade to QuickTime 4 Pro. (If you do video production, though, verify compatibility with your software and hardware first.) If you only occasionally visit Web sites containing QuickTime content, you might find that the free QuickTime 4 is all you need.—JIM HEID

RATING: ♦♦♦½ PROS: Extremely versatile; supports true streaming. CONS: Poorly designed player; can't play variable–bit-rate MP3s. COM-PANY: Apple Computer (800/795-1000, www .apple.com). LIST PRICE: $30.

Flash 4

WEB ANIMATION LEADER ADDS MP3 SUPPORT, SCRIPTING TOOLS

AS VENDORS RUSH TO ESTABlish standards for Web-based media such as video and audio, one program has emerged as something of a standard for Web animation. Macromedia's Flash has quickly become the dominant tool for creating animation and simple interactivity, offering easy-to-use development tools and low-bandwidth animation files. And with this latest version, Macromedia has added even more reasons to adopt Flash technology: streaming-MP3 support, new actions, and improved development tools make Flash 4 ideal for Web designers who want to jazz up their sites with animations but who don't necessarily have Java-scripting skills.

Vectors in Motion

With Flash, you can create compact, streaming Web animations that are easily viewable on just about any platform. Because the program is vector-based, its animation files are very small and make for quick downloads. The Flash player takes care of rendering the vectors into bitmaps—complete with smooth, antialiased edges—and displaying them on screen.

Experienced users will notice a wealth of changes in Flash's interface, ranging from a redesigned Timeline window to improved drawing tools. For example, Flash's vector tools eschew the complicated control handles and points of illustration packages such as Macromedia FreeHand and Adobe Illustrator; instead, users can reshape an object simply by dragging its edges. It also adds several tools that experienced illustrators have come to expect, such as round-cornered rectangles.

The drawing interface benefits from long-overdue improvements such as default shift-selection of multiple objects and streamlined tool palettes, and the Inspector palette has been revamped with tabbed subdivisions containing multiple inspectors (see "Flashy Interface"). Curiously, flip controls aren't included in the Transform palette. We'd also like to see the addition of mirror transformations.

Flash's Timeline interface has undergone several improvements that make

animation scripting easier. The window itself has been redesigned and features new toggles, including switches for locking and hiding objects. Although the process of creating an animation remains largely the same, Flash 4 adds Guide Layers that let you script an object's animation by drawing a path along which it moves.

The new animation tools are as powerful and easy to use as ever, but velocity

Flashy Interface Flash 4's interface sports numerous changes, including a new tabbed Inspector palette.

controls would be a nice addition. Although the program retains version 3's ease-in/ease-out feature, it's not always possible to synchronize complex motions with audio or to tightly choreograph multiple complex motions.

Control Freaks

Flash 4 sports numerous new actions and tools that make it easier to create interfaces and add interactivity without resorting to JavaScript. For example, the new text-field tool lets you place an editable text field anywhere in your animation. The Text Field Properties dialog box lets you define properties of your fields, such as borders, background colors, length restrictions, and more. Associated with every editable text field is a variable containing the value currently entered in the field; you can pass variables between Flash movies and CGI scripts, using Flash 4's new actions.

Among the new actions in Flash 4 are IF/ELSE commands that let you create

conditional structures. The new LOOP command lets you create simple WHILE loops, and the new CALL statement lets you branch to a particular frame's actions, just as you would branch to a subroutine in a mainstream programming language.

Flash 4's new actions also let you create forms, dialog boxes, and pop-up menus. Forms can include standard interface elements, such as radio buttons and checklists, and can return data to the Flash player or to Web-based applications. Like all of Flash's other features, these interface elements are platform- and player-independent.

Interface elements are easy to implement with the new version's handy, powerful scripting actions. But although those elements offer a simple way to gather and post data, Flash 4 is short on "building blocks" for creating more-sophisticated custom interfaces.

Flash 3's audio support was good, but that of version 4—with its MP3 compression—is better. MP3 compression makes adding streaming audio to your Flash animations much more practical. In previous versions, you had to use audio very judiciously so as not to slow throughput. With version 4, not only can you attach small audio files to events such as button clicks but it's even practical to add long voice-overs and music beds under the audio. And each audio file in your Flash presentation's library can have separate audio settings, so you can tweak the compression, depending on the particular sounds.

Macworld's Buying Advice

Flash 4 is a must-have upgrade for any Flash user. The program's interface improvements streamline development, and the new scripting controls let you create much more sophisticated presentations. For animated Web sites, Macromedia has defined the standard.—BEN LONG

USB 56K Modems

EXTERNAL MODEMS ARE EASY TO SET UP AND USE

MOST CONFIGURATIONS OF Apple's Power Mac G3 suffer from a common malady: the lack of a built-in modem. Because those systems also lack a traditional serial port, you can't simply plug in your existing serial-port modem. A slew of vendors have come to the rescue with USB modems that not only solve the missing-modem problem but also

two telephone ports, one for the line from the wall and one for a phone, fax machine, or answering device; a single USB cable connects the modem to a USB hub or directly to a Mac USB port. The units vary in size, with Boca's TelePort being the smallest overall. Viking's device stands vertically and is easily twice the size of the others (perhaps because it displays eight status lights, invaluable for troubleshooting).

You'll find the software easy to install from a CD for any of the units. The installers also load the accompanying fax software: Best Data bundles STF Technologies' Faxstf 3.2; Boca, its excellent Global-Fax 2.6.5; and Diamond, its own Faxcilitate 2.5.2. All these packages work well, although GlobalFax has the most convenient Macintosh user interface. Alas, none of the fax programs support OCR, once a standard feature with bundled fax software. The Viking ships with Smith Micro's MacComCenter 1.3, an outdated, feature-poor package that periodically crashed our test Macs.

Clockwise from left: Viking's Viking 56K, Best Data's Smart One, Diamond's SupraExpress, and Boca's TelePort.

have some advantages over older serial-port modems: they get their power from the USB port rather than from a clunky external power brick, so they're easy to install and help reduce desktop clutter. And because USB's data rate is 12 Mbps, USB modems allow higher throughput (up to 200 Kbps) with data compression than do serial-port modems, with their speed limit of 115 Kbps.

All the modems we tested—Best Data's Smart One USB 56K, Boca Research's TelePort USB 56K, Diamond Multimedia's SupraExpress 56 USB, and Viking Components' Viking 56K USB—work with G3 Macs and support the latest V.90 56K standard, making them compatible with virtually all 56K Internet services. Where they differ is in their packaging, software, and support.

Package Deal
Each of the modems we tested comes bundled with a quick-start guide and a CD-ROM containing software and additional documentation. Each modem has

Test Flight
In online tests with several ISPs, the modems all performed well, managing connection speeds of up to 53 Kbps and hitting 200-Kbps throughput on highly compressed data. When products such as these perform almost identically, tech support is a critical distinguishing characteristic.

To test technical support, we asked each vendor to solve a problem involving its modem connected to an iMac. Boca's tech support was extremely helpful and gave us the solution we were looking for—we needed to install an iMac firmware upgrade from Apple. Diamond's tech support went one better, diagnosing the problem correctly and pointing out that the necessary firmware upgrade was included on the SupraExpress's CD. Both Boca and Diamond offer Mac-specific support resources on their Web sites.

Best's phone-support technicians

couldn't diagnose the problem; they acknowledged that they didn't understand how Macintosh models differed from each other. Viking simply said that its modem wasn't compatible with the iMac, even though it ended up working after we installed the firmware upgrade. And the two companies' Web support is minimal, limited to marketing information.

Macworld's Buying Advice
External USB modems make Internet and fax connectivity easier than ever. If your fax use is limited, save money by going with the bargain-priced Best Data Smart One or Diamond SupraExpress. If you're a faxing fiend, go for Boca Research's TelePort, with its first-rate fax software. Whether or not you're a frequent faxer, we can't recommend Viking Components' modem; its buggy software and poor Mac support aren't worth its higher-than-average price.—MEL BECKMAN

Smart One USB 56K
RATING: ●●●½ **PROS:** Easy installation; inexpensive. **CONS:** Weak tech support; fax software lacks OCR capability. **COMPANY:** Best Data (818/773-9600, www.bestdata.com). **COMPANY'S ESTIMATED PRICE:** $100.

SupraExpress 56 USB
RATING: ●●●● **PROS:** Easy installation; includes iMac firmware updater; good fax software; inexpensive. **CONS:** Fax software lacks OCR capability. **COMPANY:** Diamond Multimedia (800/468-5846, www.diamondmm.com). **COMPANY'S ESTIMATED PRICE:** $100.

TelePort USB 56K
RATING: ●●●●½ **PROS:** Easy installation; excellent fax software. **CONS:** Fax software lacks OCR capability. **COMPANY:** Boca Research (800/336-2009, www.globalvillage.com). **COMPANY'S ESTIMATED PRICE:** $139.
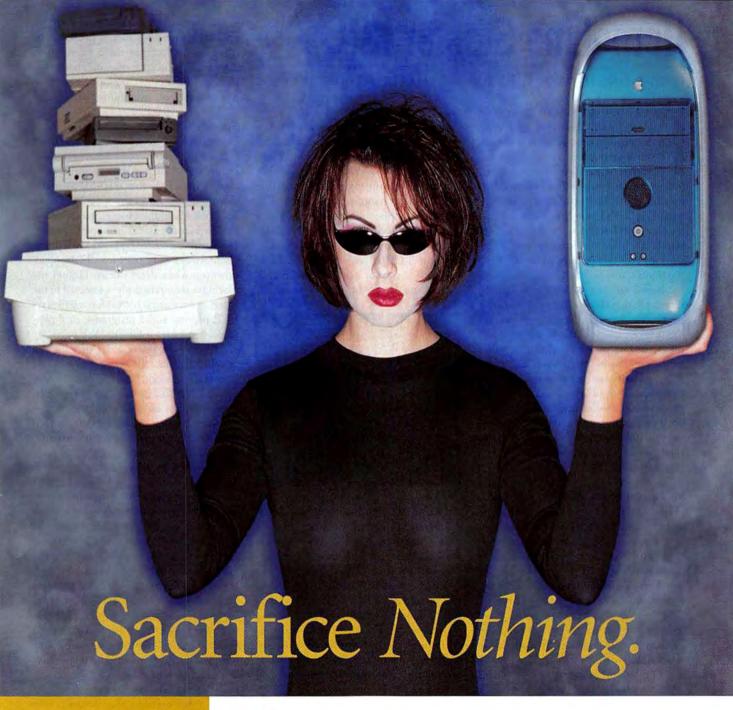
Viking 56K USB
RATING: ● **PROS:** Easy installation; detailed status lights. **CONS:** Abysmal fax software; weak tech support. **COMPANY:** Viking Components (800/338-2361, www.vikingcomponents.com). **COMPANY'S ESTIMATED PRICE:** $120.

HomeLine Starter Kit

PHONE-LINE NETWORKING BUNDLE SHARES INTERNET ACCESS

FOR THOSE WHOSE SKILLS don't include pulling wire, creating a network of home computers can be something of a challenge. And if you want to outfit each computer with a modem and an Internet connection, it can be a costly proposition as well. Farallon's HomeLine Starter Kit, a hardware-and-software combo that uses standard telephone wiring to form a network of two computers, addresses both problems—to a point.

Based on the HomePNA cabling standard, the HomeLine isn't the only phone-line–based networking product on the market, but it is the first to support the Mac. The package includes two PCI cards, compatible with Macs as well as PCs, and software that lets you configure one computer (a Mac) as an Internet gateway. Once you install the cards in both computers and connect standard four-pair phone cable to a phone line via existing RJ-11 wall jacks, you've got yourself a network.

Share and Share Alike

With the HomeLine, Macs and Windows 95 and 98 machines can share files, printers, and a single Internet connection. The HomeLine supports phone-based (modem and ISDN) and network-based (cable-modem and LAN) Internet connections; whenever a browser or other TCP/IP-based application is launched from any computer on the network, the gateway machine connects to your ISP as it normally would.

The HomeLine allows PCs to share resources with Macs, using AppleTalk (provided you install the bundled copy of Miramar Systems' PC MacLAN on the PC). And if you have Netopia's Timbuktu Pro, you can use any machine on the network to exchange files and messages or control a remote computer. An added bonus: if you currently dial up the Internet *and* connect to a local PC via the same network and you install the HomeLine on both machines, you won't have to switch TCP/IP configurations or add a second Ethernet connection just to grab a file from the Windows machine or surf the Web.

Troublesome TCP/IP

We installed HomeLine cards in a Power Computing Power Macintosh running Mac OS 8.6 and in a Dell Opti-Plex GXa running Windows 95 and then followed the thin manual's installation and configuration instructions. The autosetup application configures a new Internet connection on the gateway Mac or creates a custom configuration, using existing TCP/IP and Remote Access settings; a similar application installs HomeLine drivers on PC clients.

Although setup on both machines was straightforward, we were initially unable to connect to the Internet from our PC client and we had only intermittent success surfing the Web from the PC after manually connecting to our ISP from the gateway Mac (rather than simply launching a browser). To make matters worse, Farallon's technical support wasn't much help: the first technician we spoke to was almost completely uninformed about the networking details of the HomeLine, and the second—who seemed to be reading from the user manual—ultimately concluded that the fault lay with our ISP. We fared no better when attempting to connect through a second ISP.

We finally abandoned the by-the-book approach most home users would take and dove into the networking nether regions of Windows. After changing the static IP address the HomeLine assigned to the PC, we entered the Mac's gateway address and our ISP's DNS address in the Windows 95 Networking control panel. Our efforts were rewarded with a stable Internet connection, but the typical HomeLine user would probably be ill-equipped to make these substantive, nonintuitive configuration changes—changes that neither the documentation nor tech support even hinted at.

Speedy Sharing

HomePNA-based networks, such as those that use the HomeLine, operate at a maximum speed of 1 Mbps—significantly slower than Ethernet's 10-Mbps maximum but four times the speed of Local-Talk. We found the HomeLine's speed to be adequate for Web surfing, file sharing, and streaming-audio and -video playback. Connections were occasionally dropped, however, when users of two HomeLine machines simultaneously connected to the Internet were actively transferring files via FTP, playing audio programs, or downloading graphics-intensive Web pages.

If you've strained under the sluggish printing and slow file-transfer speeds of a LocalTalk network, you'll find the Home-Line's local sharing downright speedy. Even Ethernet users will find the Home-Line fast enough to share a color screen via Timbuktu or print a long document.

Macworld's Buying Advice

At $139, the HomeLine Starter Kit isn't the cheapest product for creating a network, but it might be the most convenient (once you get it going). Families and SOHO users who want to share both local and Internet resources will appreciate the HomeLine's flexibility and relative speed. If your machines already have modems attached, Ethernet may make more sense for local file sharing and printing, and networking novices may want to wait until Farallon revises its autoconfiguration software and documentation. And if your network includes an iMac or a PowerBook, stay tuned; Farallon says a HomeLine product that supports these systems may be available later this year.—SHELLY BRISBIN

Powerful, fast, smart–
and bred for the unbridled imagination.

(No, we're talking about the Intuos graphics tablet system.)

MacDrive 98 3.0

DISK-MOUNTER GAP NARROWS

APPLE'S 1998 INTRODUCTION OF the Mac OS Extended Format, also known as HFS+, created a scramble among developers of disk utilities as they prepared upgrades to support the new format, which increases a drive's effective capacity by reorganizing the way files are stored. Among vendors of disk-mounting utilities for Microsoft Windows, DataViz introduced HFS+ support in MacOpener 4.0 (♦♦♦½; $60 list price; *Reviews*, January 1999). Now Media4 Productions has

Is It Mac or PC? With MacDrive 98, you'll quickly forget whether you're using Mac or PC media in your Windows PC.

closed the gap by adding HFS+ support to MacDrive 98 3.0, the latest version of its disk-mounting software. Either program is an excellent choice if you want to use Mac media with a Windows PC.

Nearly Identical
Except for adding HFS+ support, MacDrive 98 3.0 is identical to version 2.0. With it, you can use Macintosh disks on a Windows 95, 98, or NT 4.0 PC. The program handles floppies, Iomega Zip and Jaz cartridges, CDs, external hard disks, or any other disks available in a PC version. You can read and write data to the disks as if they're Windows media. With HFS+ support, the program can now handle media in the new disk format as well as the older HFS format.

The program remains an install-and-forget-it utility. Without using any special commands, you can access Mac disks from the Windows desktop, in Windows Explorer, and from Open and Save dialog boxes in Windows applications. The only time you'll even remember you're work-

ing with Mac media is when you see the apple that MacDrive 98 adds to disk icons. However, when you right-click on the disk icon to bring up Windows' contextual menu, the utility adds Macintosh-specific media options, such as the ability to format a disk for the Mac.

A Few Extras
Although it's similar to MacOpener, MacDrive 98 offers a few extra utilities that its rival does not. For example, it can identify the creator and file types of Mac files—handy when you're trying to update extension maps in Mac-disk-mounting software, in cross-platform networking software, or in Mac OS File Exchange. Another handy utility lets you copy Mac disks from your PC's drives. On Media4's Web site, you'll find several other utilities that remap special symbols between Mac and PC files so they'll appear correctly when you open a document.

MacDrive 98 doesn't work with Windows 3.1, but neither does MacOpener, which previously supported the older Windows version. DataViz dropped Windows 3.1 support in MacOpener 4.1, a recent update. (MacOpener 4.1 is also included with DataViz's ♦♦♦♦ $100 Conversions Plus 4.6 cross-platform file-translation utility.)

Macworld's Buying Advice
Both MacOpener 4.1 and MacDrive 98 3.0 let you easily and transparently open Macintosh files on Windows PCs. MacOpener once had an edge because of its HFS+ support, but it's now almost impossible to choose between the two. Their prices are almost the same, and their key features are the same.

Nevertheless, we prefer MacDrive. It has a few niceties that MacOpener does not, allowing you to map file-name extensions more easily and providing the handy iconic reminder when you're working with Mac media. Most people probably won't use these extra features, but it's nice to have the added capabilities if you need them.—GALEN GRUMAN

RATING: ♦♦♦♦½ **PROS:** Mac disks are seamlessly accessible to PC users; easy to add file-extension maps; easy to format Mac disks on a PC. **CONS:** None significant. **COMPANY:** Media4 Productions (515/225-7409, www.media4.com). **COMPANY'S ESTIMATED PRICE:** $70.

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Remote-Control Software

TIMBUKTU AND HOUSECALL EASE TROUBLESHOOTING, COLLABORATION

THOSE OF US WHO NEED TO observe other users' actions, control their desktops, exchange files, and conduct voice or typed chats know that Netopia's Timbuktu Pro is a vital part of any network administrator's tool kit. Version 5.0 of this remote-control and remote-access software lets you connect more easily to users over the Internet or even by telephone, letting you help more users than ever before. If you simply want to offer remote help to

Knock Knock HouseCall 5.0 requires permission before letting the "doctor" observe, control, or work with files on the "patient" system.

friends and family who are having problems with their Macs, Netopia also offers a consumer-oriented version of Timbuktu, the elegant and useful HouseCall 5.0.

Timbuktu: More Connections
Timbuktu Pro 5.0 improves on its predecessors with three new features: an Internet Locator service, which helps you find Internet-based users by their e-mail addresses; an IP browser function, which looks for Timbuktu-equipped systems on the local TCP/IP subarea network; and the ability to use one line to both talk to the user and work on the remote system.

Although Netopia has dropped the conferencing feature—introduced in version 4.5—from Timbuktu Pro and made it a separate product (the $30 Timbuktu Conference), owners of version 5.0 can download it free from the company's Web site. Timbuktu Conference is adequate, but it's not on par with Microsoft's free, Windows-only NetMeeting.

Timbuktu Pro 5.0's only other drawbacks are poor documentation, a scattered interface with too many palettes and buttons, and the fact that it won't run unless installed on the start-up disk.

HouseCall: Easy Help Tool
The new (despite the version number) HouseCall 5.0 lets you dial up or connect via the Internet to a Mac—but not a PC—so that you can control its desktop, observe the user's actions, exchange files, and have voice or typed conversations with that user. It's a perfect troubleshooting tool that can double as a collaboration tool. Just keep in mind that only HouseCall Doctor (the administrator component) can initiate file transfers; unlike Timbuktu Pro, HouseCall is not a two-way collaboration tool.

Both the Doctor and Patient components are extremely simple to install and use. Some of HouseCall's functions require a lot of bandwidth and are noticeably slow over a dial-up or Internet connection, but that's a limitation of those connections and not a flaw in HouseCall. Our only quibble is with the price of the Patient software (the Doctor software is free).

Macworld's Buying Advice
Timbuktu Pro is one of those programs that gets better with each update; version 5.0 is a worthwhile upgrade for most users and indispensable for those who aren't on a LAN. For anyone who regularly troubleshoots other people's Macs remotely, HouseCall 5.0 is a must.—GALEN GRUMAN
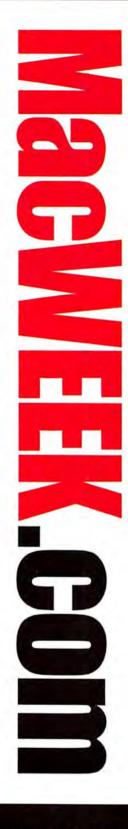
HouseCall 5.0
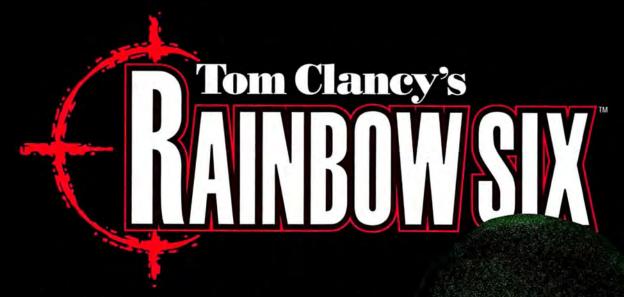
RATING: ♦♦♦♦ **PROS:** Offers easy way to help users with their Macs remotely. **CONS:** A little pricey. **COMPANY:** Netopia (800/485-5741, www.netopia.com). **DIRECT PRICE:** Single-patient license, $30.

Timbuktu Pro 5.0

RATING: ♦♦♦♦ **PROS:** Easier than with previous versions to connect to users over the Internet and via phone; strong collaboration and remote-management tools. **CONS:** Thin documentation; scattered interface. **COMPANY:** Netopia (800/485-5741, www.netopia.com). **LIST PRICE:** Single-user pack, $100.

Mathematica 4.0

THE LAST WORD IN NUMBERS

ANYONE WHO HAS USED MATHematica 3.0 may find it hard to believe, but Wolfram Research actually found a few important improvements to make in version 4.0. With its beefed-up numeric operations and print and Web output, Mathematica 4.0 reaches far beyond its roots as a symbolic-computation program; it's now an all-purpose tool kit for any task relating to processing and communicating technical information.

Mathematica's number-crunching abilities—particularly with respect to large arrays of numbers—have improved

Everywhere at Once Mathematica 4.0 makes long-distance technical collaboration possible, by displaying notebooks as HTML files, with better-than-textbook appearance.

steadily over the years, but in version 4.0, they're downright revolutionized. A standard Power Mac G3 running the new version outperforms older SGI RISC workstations when processing huge data arrays and when running signal-processing applications. Specifically, the rewritten matrix operations store large and sparse arrays more efficiently, the code for the Fourier-transform routines has been optimized, and the program now reads HDF files at impressive speeds.

One reason this performance is crucial in science and engineering environments is that the previous leader in array processing, The MathWorks' MATLAB, is no longer being developed for the Mac. In tests using a ten-item matrix-math test suite, Mathematica 4.0 on a 266MHz Power Mac G3 beat MATLAB 5.2 on a 300MHz Pentium II system by an average factor of 4.3. And because Mathematica's automatic translators can convert MATLAB M-files to Mathematica notebooks, developers of custom matrix-processing

applications should be able to make the switch without too much inconvenience.

In the realm of advanced development aids, Wolfram has further refined Mathematica's rules for simplifying symbolic expressions and has added to the special-function list some math functions that previously defied useful computer definition. For science and math development, Mathematica no longer has any direct competitors on the Mac—or, for that matter, on PCs and Unix systems.

Appearance Is Everything

Mathematica 3.0 greatly simplified the task of producing journal-quality printed output, introducing features for using standard textbook-style notation rather than the computer-code output style used by most other math programs (including earlier versions of Mathematica). In version 4.0, the word-processing features are solid enough that you could easily make Mathematica your primary technical word processor. Not only are its editing features and style sheets more useful for technical work than those in Microsoft Word but printing as TeX and the newer LaTeX 2e files is also faultless.

Equally impressive is Mathematica 4.0's adaptation to the world beyond print. Notebooks saved as HTML generate files of HTML source code and folders of GIFs for artwork; notebooks can also contain hyperlinks to other notebooks or to URLs. The program displays any kind of math notation beautifully on the Web, and the new version can work with Web sound files as well as graphics.

Macworld's Buying Advice

Besides being faster and more compact than its predecessors, Mathematica 4.0 offers an amazing range of truly useful new features. And for students, the price is right: with an iMac and the $79 Student Edition, you have the finest environment for technical computing and publication ever developed. It's simply the most impressive program I've seen in ten years of reviewing technical software.—CHARLES SEITER

RATING: ♦♦♦♦♦ **PROS:** Anticipates and solves a wealth of computing and publication problems; faster than version 3.0. **CONS:** None. **COMPANY:** Wolfram Research (800/965-3726, www.wolfram.com). **LIST PRICE:** $1,495.

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InterView

INEXPENSIVE USB VIDEO CAPTURE

NOW SHOWING IN THE BARgain basement: XLR8's InterView, the least-expensive video-capture device we've ever tested. Retailing for just $99, the InterView comprises USB video-capture hardware and the full version of Strata's VideoShop video-editing program. It's an amazing value, although we encountered glitches when trying to capture video with programs other than VideoShop.

Compared with Avid Technology's $299 Avid Cinema for Macintosh with USB (see *Reviews*, August 1999), the InterView hardware is far smaller, resembling a black butane lighter with three cables attached to it. One of the cables connects to the Mac's USB port, and the other two connect to S-Video and composite-video sources. Like Avid Cinema, the InterView captures video only, relying on the Mac's built-in audio circuitry to capture sound.

The InterView is a bit more finicky than Avid Cinema where system software is concerned, requiring Mac OS 8.6. Like Avid Cinema, the InterView requires Apple's latest USB firmware and includes the necessary installers for updating older iMacs.

For capturing and editing video, the InterView includes Strata's $495 VideoShop 4.5. (You also get a scaled-down version of AirWorks' TuneBuilder, which builds custom-length music soundtracks in a variety of styles.) There's only one catch: rather than getting printed manuals for Video-

Shop, you instead have to click your way through Adobe Acrobat files to learn the program. But still—such a deal.

Using VideoShop's Capture window, we were able to grab crisp video at a window size of 320 by 240 pixels and a frame rate of 30 fps. (Avid Cinema captures at the identical frame size and rate.) You can also grab 640-by-480-pixel still images. VideoShop is far more powerful than Avid Cinema's software, packing more effects and

editing features, but it's also a lot harder to learn and use. And unlike Avid Cinema, VideoShop can't export in RealVideo G2 format, so moviemakers wanting to publish in this popular Web video format will need additional software.

The InterView captured smoothly with VideoShop, but we encountered crashes and visual glitches when using other QuickTime capture tools, such as Web-cam software. XLR8 acknowledges incompatibilities with some QuickTime-based software and says the InterView 1.1 driver, due out by the time you read this, will fix the problem.

Macworld's Buying Advice If you're just getting started with digital video and you'd prefer some hand-holding, Avid Cinema may be a better USB capture system. But if you're on a tight budget and you're willing to read on-screen manuals instead of printed ones, InterView deserves a look. There's no cheaper way to get video into a USB-equipped Mac.—JIM HEID

RATING: ●●● PROS: Inexpensive; powerful software. CONS: No printed manual for Video-Shop; can't export in RealSystem G2 format; incompatible with some QuickTime software. COMPANY: XLR8 (888/957-8867, www.xlr8 .com). LIST PRICE: $99.

C-2000 Zoom

TWO-MEGAPIXEL DIGITAL CAMERA

LAST YEAR, MEGAPIXEL DIGITAL cameras were the rage. Now it's time for two-megapixel cameras: models that produce images with 2 million pixels or more. The new Camedia C-2000 Zoom, the first two-megapixel camera from Olympus, is a point-and-shoot model that captures images at up to 1,600 by 1,200 pixels. It makes great images but falls a little short of its main competitor, the Nikon Coolpix 950 (♦♦♦♦½; "Digital Cameras Develop," September 1999).

Described by Olympus as a "filmless digital camera," the C-2000 Zoom looks and handles like a traditional film camera. It's small enough to fit in a shirt pocket, although it might make for an unsightly bulge under a suit jacket.

We looked at images captured under a variety of lighting conditions: daylight, onboard electronic flash, and tungsten lighting in a studio environment. With all three, images came out clear and sharp, with good color fidelity. However, the onboard flash tends to produce red-eye in shots of people unless you use the camera's red-eye–reduction feature.
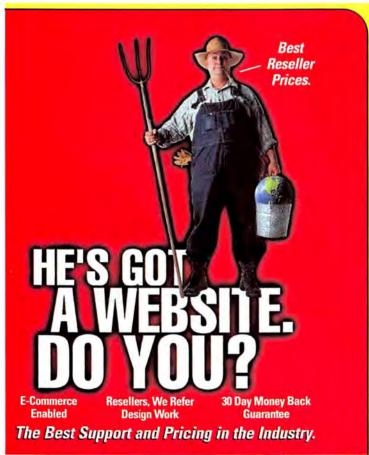
The camera's controls are all within the range of the right thumb and index finger, making them easy to reach. It provides a 3× optical zoom and lets you automatically or manually select an ISO rating of 100, 200, or 400. There's a manual viewfinder, which is nice, because the LCD is a true battery pig. (The optional NiMH batteries and recharger should be considered a must.) However, the center point of the viewfinder lens is 1.5 inches from the center point of the picture-taking lens, which can cause parallax problems when shooting subjects up close.

The camera saves images by using JPEG compression, but it also lets you save uncompressed TIFF images for maximum image quality. Like other Olympus cameras, the C-2000 Zoom uses 3.3v SmartMedia cards for storage, supporting all capacities, up to the hard-to-find 32MB cards. The camera ships with an 8MB card, but you'll need higher capacity if you want to save files in the uncompressed TIFF format. Because the TIFF files approach 6MB apiece, you can get only one image on an 8MB card. The card holds about 7 images in the highest-quality JPEG mode and 15 images in the medium-quality mode.

Macworld's Buying Advice Overall, the Camedia C-2000 Zoom continues the Olympus tradition of good-quality digital cameras. Like many other digital cameras, it's a memory hog, and it lacks the single-lens–reflex capability of the Olympus D620L. But it captures great-looking images at high resolution and is reasonably priced. However, we still give the nod to Nikon's Coolpix 950, which offers a slightly wider color gamut and a viewfinder that's set closer to the picture-taking lens, reducing parallax problems.—RICK OLDANO

RATING: ♦♦♦♦ PROS: Good-looking images; high resolution. CONS: Viewfinder prone to parallax problems; flash tends to produce red-eye. COMPANY: Olympus America (516/844-5000, www.olympus.com). COMPANY'S ESTIMATED PRICE: $999.

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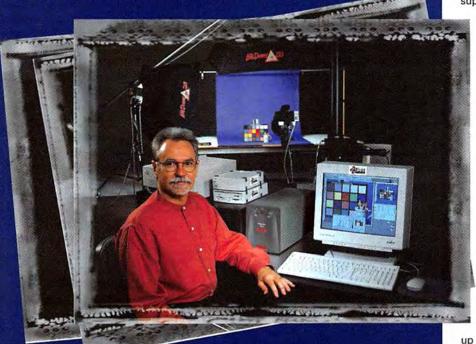
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RichLink Author 2.1

FLAWED HYPERTEXT AUTHORING SYSTEM

AS POWERFUL AS HTML IS FOR creating annotated documents, it's easy to get lost jumping back and forth between links and the main text. With RichLink Author 2.1, you can create alphanumeric, image, sound, and QuickTime-movie annotations that appear on top of the main document when the user clicks on a link. (RichLink also supports conventional URLs that branch to separate documents.) You can view RichLink documents in any Web browser by installing a plug-in; best of all, both the plug-in and the authoring program are downloadable at no cost from Sentius's Web site. Sound too good to be true? It is—for now.

RichLink documents begin as raw text, which you can type directly into the application or import from a word-processing program. (RichLink crashed whenever we tried to import a Microsoft Word document, however; Sentius is working on a fix.) To create an annotation, you simply select the words you want to link to and either enter the annotation text or select an image, sound, or movie file.

In addition to defining annotations

Pop-up Links The American Heritage Deluxe database lets you link definitions to words in your RichLink Author documents.

manually, you can link words in your RichLink document to databases you license from Sentius. This powerful function lets you provide word definitions and translations without entering them by hand. Sentius currently offers seven English and foreign-language databases, with legal and medical dictionaries on the way. Licensing fees vary, depending on how you plan to use and distribute your documents—for example, an educational license costs $249, with a $99 annual fee after the first year.

Alas, RichLink's problems range from cosmetic to serious. For example, text annotations were sometimes cut off at the edge of my monitor and the plug-in refused to dis-

play linked items in color. And, cheap RAM notwithstanding, RichLink is a memory hog—for those who are working with documents that exceed eight pages and use two or more databases, Sentius suggests 56MB for the authoring application alone. (Even with a memory allocation of 65MB, RichLink sometimes felt sluggish on a Power Mac G3/400.) The database files are also hefty, with the American Heritage Dictionary gobbling up more than 183MB of disk space.

Macworld's Buying Advice It's a shame to find fault with a hypertext authoring program that costs no more than the price of a download. But serious problems with RichLink's import and display functions make the program almost unusable in its current form. With a few vital tweaks, however, RichLink could become a compelling tool for electronic publishers on or off the Web.—FRANKLIN TESSLER

RATING: ♦♦½ **PROS:** Free authoring program and viewer; automatic word definitions and other annotations. **CONS:** Crashes when importing Word documents; links don't display correctly; steep memory requirements. **COMPANY:** Sentius (800/434-0474, www.sentius.com). **LIST PRICE:** Authoring program and viewer are free; database licensing fees vary.
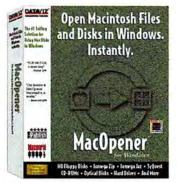
Trouble mounting?

In a world where Windows and Macintosh incompatibility causes endless problems, DataViz offers a little help. MacOpener®. A convenient utility that surmounts all obstacles when your PC needs to read, write and format Macintosh disks.

With MacOpener installed on your PC, reading and writing files on a Mac-formatted disk, cartridge or CD is a breeze. MacOpener lets you open the disk on your PC just as if it were formatted for Windows. You can then view the contents and copy files to and from the disk from any Windows application. MacOpener automatically adds the right PC extension to Macintosh files, so you can launch a Windows application by simply clicking on the file. It even lets you format the Mac disk just as if it were a PC disk. How's that for trouble free performance?

At DataViz, solving PC to Mac compatibility problems is our business. As well as MacOpener, we offer Conversions Plus®, the premier file conversion program that translates hundreds of different file formats between PC applications or Macintosh and PC applications. Quickly and accurately. And offers over 1,000 file translation combinations, to solve almost any file conversion needs.

So discover for yourself that with DataViz, no file compatibility problems are insurmountable.

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Stealth Serial Port

ADD A SERIAL PORT TO YOUR BLUE G3

APPLE'S LATEST POWER MAC G3 systems have plenty to offer, including USB and high-speed FireWire ports. But what do you do with your printers, modems, cameras, or other peripherals that require a serial connection? You could add a PCI card with a serial port, but that would consume one of only three PCI slots. A better answer is GeeThree.com's Stealth Serial Port, a $50 device that plugs into the modem slot of blue Power Mac G3 models.

The Stealth Serial Port consists of a small interface board, along with a ribbon cable and serial-port connector. Because it takes up the modem slot, it precludes the use of an internal modem, but you can employ the Stealth to connect an external serial modem.

Installing the device is a breeze: you remove a metal plate from inside the computer, screw in the serial connector, attach a cable, and plug the interface card into the modem slot. Just add a system extension, and you're ready to go. Our only complaint is that the package didn't include the necessary software on a CD-ROM. Instead, you have to download the extension from GeeThree.com's Web site. It's just a 40K download, but it's still an inconvenience. Fortunately, a CD containing the extension and additional software should be available by the time you read this.

Once it's installed, the Stealth works just like the built-in serial connections in older Macs. For example, if you want to print, you select the printer in the Chooser and then select the port from the Connect To list. If you want to use LocalTalk, open the AppleTalk control panel and select Modem Port from the pop-up menu. To sync your G3 with a Palm device, open HotSynch Manager, click on the Serial Port Settings tab, and select Stealth Serial Port from a pair of pop-up menus.

We tested the port by performing several common tasks. We printed a ten-page document on an Epson Stylus Color 740; dialed into an Internet service provider, using an external U.S. Robotics modem; and transferred a 30MB application via a serial-to-serial connection. The port worked flawlessly in each case and was just as fast as a regular serial connection.

Macworld's Buying Advice The Stealth Serial Port is a simple, inexpensive hardware product that lets you use printers, modems, and other serial devices without consuming one of the blue G3's precious PCI slots. It precludes the use of an internal modem and currently requires that you download the software from the Web, but the latter is a minor inconvenience that should be fixed when the company begins shipping a CD with the product. If you're looking for a way to keep using those old serial devices, the Stealth Serial Port is the ticket.—STEPHEN BEALE

RATING: ●●●● PROS: Easy to install; adds serial port without consuming PCI slot. CONS: Precludes use of internal modem; required software must be downloaded. COMPANY: GeeThree.com (info@geethree.com, www.geethree.com). LIST PRICE: $50.

RealBasic 2.0

OBJECT-ORIENTED BASIC FOR THE MAC

PROGRAMMING IS NEVER GOing to be easy, since it forces otherwise sane people to think like computers. Folks with the imagination to do just that will appreciate Real Software's RealBasic 2.0.2, a development environment for experienced programmers and novices alike. In spite of its tendency to create large applications, it makes creating user interfaces—a heretofore odious task—uncommonly easy.

The BASIC language has evolved greatly since its invention, in the 1960s. Like other modern dialects, RealBasic is object-oriented. This approach lends itself particularly well to building user interfaces (UIs), whose windows and menus are typically labor-intensive to code with a traditional language such as C. Combining the organizational approach of object-oriented programming with built-in support for the Mac's standard UI elements, RealBasic makes creating an interface as simple as dragging and dropping elements from a tool bar into a window.

Once you've built your application's UI, you attach the BASIC code to each element within a Mac-like editing environment.

Programmers who are used to keeping source code in lengthy text files may find this process disconcerting at first, but RealBasic's approach makes sense for nonprofessional programmers and takes only a little getting used to for pros. RealBasic also offers a wealth of Mac-specific features, including support for accessing serial ports or sending and receiving data via TCP/IP.

Drag-and-Drop Development Creating this UI in RealBasic 2.0.2 was a simple matter of dragging the prefab elements from the tool bar into the window.

If you need database access or want to create software that runs under Windows, another $200 gets you the professional version of RealBasic. RealBasic Professional's database-connectivity tools let you develop front ends to large databases and also lets you create a Windows version of your application with almost no additional effort.

But despite the program's ease of use,

neither version of RealBasic is perfect. For example, there's no interactive way to examine the methods associated with classes, including built-in ones, unless they're described in the admittedly abundant online documentation. A bigger problem is the size of the final applications RealBasic creates: a simple application for 680X0 machines is around 250K, and the PowerPC-native version of the same application weighs in at a hefty 800K uncompressed.

Macworld's Buying Advice Experienced programmers who would rather spend their time working on under-the-hood functionality than the UI or database-access glue will find RealBasic 2.0.2 well worth its price. Beginners and occasional programmers will find RealBasic accessible and useful for nearly the same reasons as the pros—the program takes on the error-prone task of getting the UI coding just right, leaving them to concentrate on their software's important internals.—STEPHAN SOMOGYI

RATING: ♦♦♦♦ **PROS:** Useful for pros and novices alike; simplifies UI creation; Pro version creates Windows applications. **CONS:** Creates large files. **COMPANY:** Real Software (512/263-1233, www.realsoftware.com). **LIST PRICE:** Standard Edition, $100; Professional Edition, $300.

Falcon 4.0

ADVANCED F-16 FLIGHT SIMULATOR

MACSOFT, PUBLISHER OF SUCH Mac gaming staples as Quake and Civilization II, has a knack for unleashing products that tax Macs to their very limits. Last year's Unreal, for example, was happiest with 80MB of real RAM and a G3 processor. This year, MacSoft has upped the ante with Falcon 4.0, a modern F-16 flight simulator that—to look and play its very best—requests a fast G3 processor, 3-D–acceleration hardware, and several hundred megabytes of hard-disk space. Woe is you if you attempt these dangerous skies with significantly less-powerful hardware.

The word *hefty* applies not only to Falcon 4.0's system requirements but to its manual as well. The tome's 600-plus pages hint that this flight sim is not to be taken lightly. Falcon is currently the closest thing Mac gamers have to piloting a real fighter jet and, as such, is as choked with electronic readouts and advanced weapons systems as the manual is with arcane acronyms. Users should therefore plan on spending days poring over the manual and running through the 31 training missions.

Wild New Yonder You too can rule Korea's airspace with MacSoft's Falcon 4.0.

Complex though Falcon 4.0 may be, that complexity comes with rewards. To begin with, under hardware acceleration, the game is gorgeous. The morning and twilight skies are properly hazy; missiles leave realistic contrails; and until you drop your fighter close to the deck, the rolling landscape looks like the real thing. Regrettably, *without* hardware acceleration, the game's graphics are chunky, and unless you have a very fast Mac and lots of RAM (meaning a 300MHz or faster G3 and 128MB of RAM), performance suffers with all the graphic goodies switched on.

According to fighter pilots who frequent newsgroups, Falcon 4.0's flight modeling is realistic. For us ground dwellers, this means that although the plane flies smoothly, landing can be tricky—novice pilots should expect to damage a lot of landing gear and lose several planes along the way.

Falcon 4.0 comes with just about everything one should expect from a modern flight sim—a large theater of operation (the Korean peninsula), three campaigns choked with dozens of missions, network and Internet play that supports *mano a mano* dogfights as well as up to four 4-player teams, and a mission builder that allows you to create your own missions. What it doesn't come with is a three-ring binder for the documentation, a handy feature in the PC version of the game.

Macworld's Buying Advice Falcon 4.0 will push the limits of both your Macintosh and your piloting skills. Casual flight enthusiasts will likely find the game too demanding, but those with the desire, patience, and hardware to fly the Mac's most realistic combat flight sim should strap into Falcon 4.0.—CHRISTOPHER BREEN

RATING: ♦♦♦♦ **PROS:** Breathtaking graphics; remarkably detailed flight sim. **CONS:** Stiff hardware requirements; steep learning curve. **COMPANY:** MacSoft (800/229-2714, www .wizardworks.com/macsoft/). **LIST PRICE:** $50.

Unreal TOURNAMENT

An all-new single- and multi-player tournament game.
[Does not require Unreal to play.]

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Here They Come!

GREAT NEW GAMES ARE ON THEIR WAY. HERE'S A SNEAK PEEK.

by Christopher Breen

As I sit in the cramped back bedroom I call my office, I think to myself, "Thank God summer is over." Yes, I slogged through the warm days and lengthy twilight evenings and prayed for the onset of blessed winter. While stubborn contrariness may explain this desire, I'm afraid the truth is even less attractive—it's addiction, pure and simple. As you might have guessed, I've got a bad jones for computer games and I need a fix of the good stuff every so often or I get a little twitchy.

The problem is that because winter embraces the Holiday Shopping Season, game publishers slate the release of their best and brightest products for December. Not that the summer is completely devoid of new games—I'll manage to get by with Quake II, Age of Empires, Descent 3, Rainbow 6, SimCity 3000, and Fly until winter arrives. But there's some tasty stuff yet to come. I've made my list, checked it twice, and here's what's on it.

Sure as Shootin'

Despite the best efforts of those who blame society's violence on video games rather than the NRA's political payola, first-person shooters are as popular as ever. Three outstanding representatives of the genre are slated to appear before the holidays: Sierra's (425/746-5771, www.sierra.com) Half-Life, Activision's (310/255-2050, www.activision.com) Quake III: Arena, and MacSoft's (800/229-2714, www.wizworks.com/macsoft/) Unreal Tournament.

It's no fluke that hundreds of thousands of copies of Half-Life made their way to PCs earlier this year. The game not only looks great under hardware acceleration, features more-realistic character move-

ment than shooters of the past, and lacks hard-and-fast boundaries between one game level and another, but Half-Life also offers characters who behave more like living beings than scripted robots. Better still, Half-Life—unlike most shooters—actually has a compelling story line: as Gordon Freeman, a 27-year-old scientist, you find yourself unintentionally involved in a secret war between the government and an icky alien race. Your job is to save humankind—and if that means leaving this world

to kick alien patootie, then so be it.

Quake III: Arena and Unreal Tournament take a different tack by dispensing with the plot entirely. Undoubtedly you've read game reviews that state, "Great as the single-player game is, it can't hold a candle to networked Death-Match play." The developers of Quake III: Arena and Unreal Tournament realize this and have focused these games on head-to-head combat. Although both games offer a single-player mode,

these single-player levels are designed to mirror networked play.

Although multiplayer battle is the point of the two games, they approach it differently. Quake III: Arena focuses exclusively on DeathMatch play, whereas Unreal Tournament will offer both Death-Match and team play. With hardware acceleration, both games will be visual delights. Unreal Tournament should be just as beautiful as its predecessor, Unreal, and Quake III: Arena will feature rounded surfaces and effects such as volumetric fog that shrouds opponents until they're close enough to carve with the chain saw.

Speaking in the Third Person

Forms of battle that take place above—rather than behind—the gun are also coming, in the form of Aspyr Media's (888/212-7797, www.aspyr.com) Tomb Raider III, Blizzard Entertainment's (800/953-7669, www.blizzard .com) Diablo II, and Bungie Software's (800/295-0060, www .bungie.com) Oni.

Surely you're familiar with the Tomb Raider series, so suffice it to say that Lara's back with more of what Lara does best. In Tomb Raider III, Lara and her environment are more polygon-rich, she carries an enhanced weapons set, and you accompany her to such exotic locations as Antarctica and Area 51. Likewise, Mac gamers know the ins and outs of Diablo, the outstanding kill-the-dungeon-dwelling-baddies adventure. Diablo II will offer five new character classes, four towns, a host of new weapons and enemies, and hardware

continues

acceleration for even richer and more-beautifully lit environments. Additionally, you'll be able to enlist other characters to accompany you on your quests.

Oni is the one wholly new third-person game coming to the Mac this year (or early next year). It's a hand-to-hand and gunplay 3-D action game done in a Japanese anime style. Featuring immense indoor and outdoor environments, dozens of opponents, a fair mix between fisticuffs (and footicuffs, elbowicuffs, and knee-icuffs) and artillery, hardware acceleration (required), and more moves than United Van Lines, Oni should be a must-have for action gamers.

Bungie Software was kind enough to show me a very early version of a game that will blow network gamers away—Halo, a third-person–perspective war game pitting humans against aliens. The game will allow up to 32 players—16 players per team—to have at it across a network or Bungie's own Internet-based BungieNet.com. Halo is drop-dead gorgeous and encourages players to adopt different skills—for example, you can hone your skills as a driver or gun-

ner on a land-based vehicle. Regrettably, you won't see it until the middle of 2000.

Strategic Decisions

The High Holidays will also bring us two strategy games that are big, big, big in the PC world—Sid Meier's Alpha Centauri, published by Aspyr, and MacSoft's Civilization: Call to Power. Both are turn-based games, and each features civilizations that peer into the future. In addition to tarting up Civilization II's graphics and interface, Civilization: Call to Power encompasses more years than Civ II—it includes those years between 4000 B.C. and A.D. 3000. Alpha Centauri takes up where Civ II left off—the descendants of those aboard the spaceship you launched at the end of Civ II have been broken into seven factions with very different ideas about how a planet should be run. You must compete against the other six factions for control of the planet.

Patience Pays Off

Two of the most common complaints you hear among Mac gamers are (a) there

are *no* sports games for the Mac, and (b) why can't LucasArts commit to the Mac platform? Partial answers to both are coming later this year. Aspyr is bringing a *huge* mainstream football game to the Mac—Madden NFL 2000. And Lucas-Arts (888/532-4263, www.lucasarts.com) has committed to putting Mac gamers behind the controls of their very own pod racer in Star Wars: Episode 1 Racer. Neither of these developments will drop basketball and baseball games or a Mac-compatible version of LucasArts' Grim Fandango in my lap by December, but they're both a *very* good start.
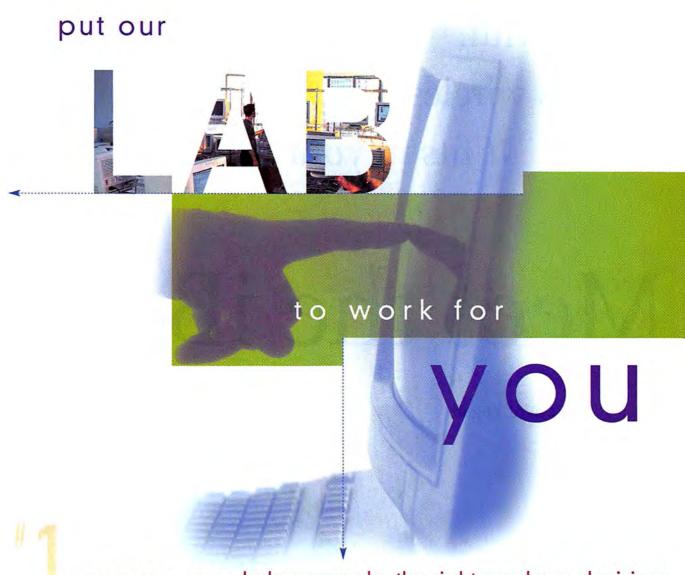
Shakin' All Over

These are just *some* of the highlights of the season. I haven't even touched on Baldur's Gate, Pro Pinball: Big Race USA, Aliens Versus Predator, and Interstate 76. With games of this caliber coming down the pike, it looks like winter's going to be a long, *long* time coming. **m**

Contributing Editor CHRISTOPHER BREEN coauthored *My iMac* (IDG Books Worldwide, 1999).

Holiday Wish List From left to right, top row: Diablo, Halo, and Quake; middle: Oni (both oval screens); and bottom: Half-Life, Madden, and Unreal.

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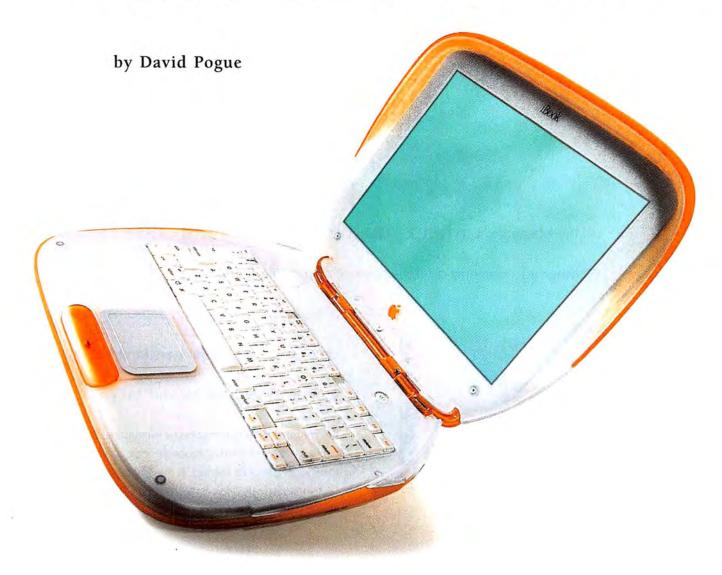
It's colorful.

It's wireless.

It fits in your backpack.

Meet the iBook

by David Pogue
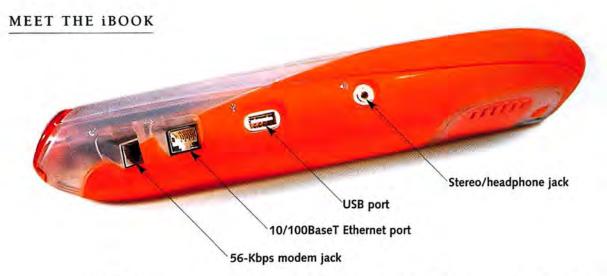
Take Me with You
The hinged handle of the iBook is ideal for users on the go.

If all the rumors and hysterical anticipation about the iBook had proved to be true, Apple's latest contraption would be a 2.2-pound, touch-screened, $900 miracle Mac. Instead we've got the iBook, a candy-coated, flattened iMac whose rugged design and bright colors are sure to win the hearts of first-time laptop owners and Web-addicted couch potatoes everywhere.

But even if the inexpensive iBook isn't the fantasy Mac dreamed up by the imaginative rumor mill, it's no less amazing. The iBook's creative design, its wild blueberry and tangerine colors, its special features, and yes, even its $1,599 price tag break the mold of portable computing and, as with the iMac that preceded it, are likely to send colorful shock waves throughout the computer industry.

Stereo/headphone jack

USB port

10/100BaseT Ethernet port

56-Kbps modem jack

iMac to Go

It's no surprise that the iMac's little sibling has all the family traits of a fun, low-cost computer. The iBook's specifications closely match the iMac's (see the table, "All in the Family: iBook and iMac Compared"), and the two-tone, translucent Lexan case is just as bright as the iMac's. The screen is a 12.1-inch active-matrix–TFT, 800-by-600-pixel, millions-of-colors display that you can switch to 640-by-480 mode when you want to enlarge the picture. And like the iMac, the iBook comes with an assortment of preinstalled software: AppleWorks, games such as Pangea Software's Nanosaur and Bugdom, plus the usual Internet freebies (Microsoft Internet Explorer and Outlook Express, and America Online).

Space-Age Design But of all iMac features, the one that laptop fans covet the most is its astonishingly smooth, unusual design: It wakes up from sleep when you open the lid. The power cord wraps, yo-yo–like, around its own chrome disk, forever eliminating the two-minute untangling ordeal you normally face when unpacking a laptop. The power socket on the side of the

iBook glows orange when the battery's charging, green when it's full; either way, you'll never again rush off to a final exam with a drained battery, unaware that your adapter was plugged into a dead outlet. The handle, at the hinge edge of the portable, provides a safe and convenient way to grab and carry the laptop; when you let go, hidden springs snap the handle flush against the case.

Cosmetically, the iBook design owes a debt to, of all things, sci-fi space movies. The indicator light doesn't just blink to indicate when the Mac is asleep—it *pulsates* like a B-movie prop. But no computer component has ever looked quite so much like one of Fox Mulder's extraterrestrial visitors as the UFO-shaped AirPort Base Station. And instead of a cheap black plastic touchpad, the iBook's pointing surface is a sheet of hard, silver, mirrored Mylar.

Built to Last In addition to the sci-fi fun of the new iBook, a raft of more functional design implementations makes this portable rugged enough for the clumsiest of users. For starters, the colored exterior rubber coating is four times as thick as on pre-

vious PowerBooks, greatly diminishing the likelihood of scratches and nicks from being shoved into an overstuffed backpack. Every possible moving, breakable, and protruding part has been removed, both inside and out: there's no fan, no flimsy port cover, no PC Cards, no removable-media bay, not even a latch to keep the clamshell halves together. Instead, a two-stage hinge spring snaps and holds the laptop shut like the hinge of a wedding-ring box. And Apple is quick to point out, too, that the iBook's ultrarounded shape wasn't sculpted just to look cool; the rounded shape dissipates the force of sudden blows, much as does an eggshell, protecting the precious contents.

All the Right Keys

Gone are the struggles between big hands and little keys—the iBook keys are every millimeter as large as those of a standard desktop keyboard. And not only are the keys larger but the inverted-T arrow keys are also arranged in a separate cluster. And similar to the PowerBook G3's, many of the keys perform secondary functions, which are colorfully indicated on the key tops. You

All in the Family: iBook and iMac Compared

Product	Price	CPU	Memory	Hard Drive	Storage	Modem	Ethernet	Connections	Display Size
iBook	$1,599	300MHz	32MB	3.2GB	24× CD-ROM; no floppy drive	56K built-in	10/100BaseT	USB; no SCSI, no FireWire	12.1 inches
iMac	$1,199	333MHz	32MB	6GB	24× CD-ROM; no floppy drive	56K built-in	10/100BaseT	two USB ports; no SCSI, no FireWire	15 inches

can trigger these alternative functions—turning the right-hand half of the keyboard into a numeric keypad, for example—by pressing the Fn key in the lower-left corner.

Functionality Those little function keys that almost no one uses deserve special recognition. The first six, F1 through F6, control the screen brightness, speaker volume, num lock, and mute functions of the laptop—if you don't press the Fn key. Only when you do press the Fn key do these keys trigger their labeled F1-through-F6 functions, if any. Using the Keyboard control panel, you can reverse this convention, so that the brightness and speaker controls take effect only when you press the Fn key. The remaining F-keys, F7 through F12, do something smart when pressed for the first time: they summon a dialog box that can launch a favorite program, document, or networked disk on subsequent presses of that key. And if you prefer, you can select the icons of your favorite items from the Keyboard control panel instead: just drag any icon from the desktop into the corresponding F-key slot in the control panel's Function Keys dialog box. Finally, F-keys are about to become useful without making users install utilities, such as CE Software's QuicKeys.

Removable Keyboard The keyboard offers another friendly touch: In the gaps between the banks of function keys are small sliding latches you can retract with your fingernails. Without any tools, you can lift out the entire keyboard, revealing the uncluttered insides of the iBook.

Once the keyboard is removed, you can easily access the RAM-expansion slot, which can accommodate a single memory module with a

Tangerine Dream
The rugged design and lack of flimsy doors and port covers make the iBook a dream come true.

capacity of 32MB, 64MB, or 128MB. Take note—the iBook requires 1.25-inch, 3.3-volt, SODIMM SDRAM. Because this RAM type is not the same memory used in the Power-Book G3, owners of Apple's professional portables cannot swap RAM between a G3 and an iBook.

Not so long ago, Apple made it nearly impossible for users to pry open a PowerBook. To add memory or enhance the system, users *had* to have professionals make the adjustments—or risk voiding their warranty. But the iBook is a different story. Surprisingly enough, directly to the right of this RAM slot under the keyboard is a crystal-clear diagram that shows you how to install memory.

Lock Up the Keys Despite the convenience and simplicity of opening the iBook to add more RAM, teachers and parents need not cringe: Apple also included a special screw tucked between two function keys that, when turned, locks the keyboard shut—a handy feature for teachers

looking to deter young scientists who want to research what happens when Apple circuitry meets apple juice.

Keeps Going and Going
On the underside of the iBook, two thumbscrews secure a plastic panel covering the compartment for the long, thin chrome battery. Unlike with the G3's battery, you can't change the iBook's battery while the computer is asleep—you must shut down first. Apple claims that this rounded battery lasts six hours per charge; but as Macworld Lab battery tests on the bronze-keyboard PowerBook G3 demonstrated (see *Reviews*, September 1999), Apple's estimates, like those of other laptop makers, are not the real-world results most users will get, since the company's tests are performed with the brightness dimmed while the computer is running low-horsepower programs. For the final word on the iBook's battery life and performance, stay tuned for Macworld Lab benchmarks of the first ship-

Colors	Add-ons
blueberry, tangerine	Wireless Networking AirPort card, $99; AirPort Base Station, $299
blueberry, tangerine, strawberry, lime, grape	none

Open Sesame
Every iBook comes with a 24× CD-ROM drive similar to the one in its big sibling, the iMac.

Untangled
The yo-yo–like power cord eliminates the messy cables of portable computing.

ping iBook. One thing is for sure: the iBook charges its battery completely in two hours when asleep, four hours while in use—faster than most other portables.

Long-Lasting Although it may not actually get six hours of life per charge, the iBook's battery does run longer than that of any previous PowerBook. Apple achieved the extra battery life by rewriting its power-management software from scratch. Between key presses when you're typing, and even in the microseconds between the pixel-to-pixel movements of what appears to be a continuous mouse drag, the iBook processor takes extremely short catnaps. When you're typing, Web-browsing, or even crunching numbers, the portable's CPU winds up sleeping almost 95 percent of the time, thus preserving the battery's longevity.

Sleep Tight Along with the clever power-management software comes a new feature you can use when shutting the iBook down or putting it to sleep. Using options in the new Energy Saver control panel and Control Strip, you can ask the iBook to save the current contents of RAM into a single file on your hard disk. Doing so when putting the Mac to sleep offers only one arguable benefit: if you shelve the iBook for so many months that its battery goes dead in storage, your open programs and documents will still be there when the machine finally gets power again. But when you shut down with this save-RAM-contents option turned on, the advantage is immediately apparent: starting up the iBook again takes far less time than usual. You don't even see the usual parade of extensions, the "Welcome to Macintosh" logo, and so on—instead, you're taken directly back to whatever you were doing when you shut down, complete with open and even unsaved documents.

More to Come

Perhaps the most intriguing new power-management development of the iBook lies directly underneath it: two tiny metal contacts. These contacts are designed to accommodate mass iBook chargers, such as the one recently announced by VST Sys-

tems, that let teachers and employers snap multiple iBooks onto the pins of such a charger quickly and efficiently, without having to plug in and unplug power cords.

Welcome to the AirPort

By far the most revolutionary and exciting iBook feature, the one that redefines the word *portable*, is the AirPort card. This $99 PC Card–type add-on fits into a special connector under the keyboard. Once the card is installed, your iBook can communicate with a modem, Ethernet network, cable modem, DSL hookup, or other iBooks wirelessly—from up to 150 feet away—via radio waves that zoom around corners, under furniture, and through concrete walls at 11 Mbps (10BaseT Ethernet speed, about 1 megabyte per second). This expensive technology, formally known as the IEEE 802.11 spec, has been available on cards developed by Lucent. Now, thanks to Apple, this kind of wireless networking is available for less money and complexity.

Get Unconnected For multiple iBooks in a classroom or in a workplace setting, Apple offers the $299 AirPort Base Station. This four-inch flying saucer is fully equipped with a phone jack; an Ethernet port; three space-age indicator lights; and wireless receivers that communicate with the iBook antennas, which are built-in and faintly visible through the translucent plastic flanking the screen. With the Base Station, up to ten computers can surf the Web simultaneously, sharing the bandwidth of the Base Station's built-in 56-Kbps modem—or whatever faster Internet connection you've plugged into its Ethernet jack. Forty-bit encryption is built-in, and you're required to enter a password before connecting to the wireless network. You can even set up multiple Base Stations—special software lets you name each individually—and switch your iBook communications from one to another, using a special Control Strip tile. If you buy an Ethernet crossover cable, which costs about $8, you can connect one traditional Macintosh to the wireless network

or simply use the wireless AirPort Ethernet jack to connect to an existing Ethernet network.
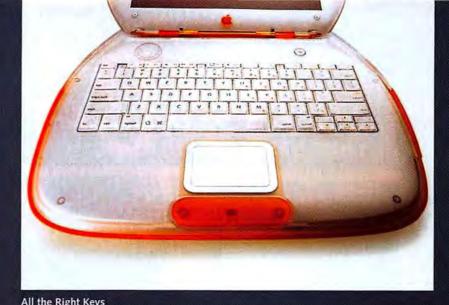
iBook to iBook
Only if you read the fine print of Apple's literature, however, does it become clear that you don't need a Base Station to enjoy an AirPort card. For example, using the included Control Strip module, you can direct your iBook to communicate with another iBook *directly*, through the air instead of via a base station. (Did you get that, multiplayer-game fans?) Moreover, you can use an iBook *as* a base station—that is, if you plug an iBook into a phone line or cable modem, up to ten other iBooks can share its modem (or other Internet connection) wirelessly. The mind reels: students can turn their assignments in to the teacher's iBook without plugging in any wires. Corporate documents can be distributed to all the attendees sitting around a boardroom table—or down the hall, or up a flight. Homebodies can sit in front of the TV downstairs, surfing the Web via the cable modem connected in the upstairs office.

More Wireless If you've just wired your house for Ethernet or bought a home-networking kit that connects your computers via the telephone wiring, you're probably smiting your forehead. If you're anyone else, however, you're probably wondering how your existing PowerBook or desktop Mac can get into the wireless action. Farallon's upcoming Skyline PC card (510/346-8000, www.farallon.com; approximately $300) lets existing PowerBooks talk to AirPort networks, with a range of 300 feet. No company has yet announced a desktop product for this purpose, but surely it won't be long. Apple's attractive wireless-networking contraption may also crumble the remaining walls between Macs and PCs, since the 802.11 technology of the AirPort is cross-platform and wireless cards are already available for Windows PCs.

What's Missing
Even though the look-and-feel of the iBook is captivating, the iBook is not the answer for everyone and the bright Creamsicle colors may clash with the tastes of the corporate world and varsity linebackers. And professional users may miss the elements found on the Power Mac G3 laptops: PC Card slots; a microphone; an infrared jack; a monitor-out jack; and, of course, a floppy drive.

Add-on products fill some of these gaps. For example, Griffin Technology (615/255-0990, www.griffintechnology.com) has announced a $25 USB microphone/line input called the iMic, and AVerMedia's (408/263-3828, www.aver.com) USBPresenter offers video-output capabilities via the iBook's USB port.

Some might argue that there's little need for a PC Card slot since the iBook comes with both a modem and an Ethernet connection—the most common uses for PC Cards. However, digital-video professionals may grouse about the lack of a FireWire connection, made worse by the lack of a PC Card slot that could have accommodated a FireWire PC Card, such as the FireWire To Go, from Newer Technology (316/943-0222, www.newertech.com).

The bottom line on the iBook's missing features: our only guess is that if Apple had endowed the iBook with every feature of its professional laptop line, nobody would pay $1,000 more for a PowerBook, whose sales will be badly cannibalized by iBooks as it is.

The Last Word
Yes, it's possible to grumble about the iBook—barely. For example, the full-size keyboard and the rugged Lexan shell make this portable larger (13.5 by 11.6 by 1.8 inches) and slightly heavier (6.6 pounds) than a PowerBook G3. And as with other products in high demand, it's safe to predict iBook shortages and a few technical glitches in the first months of its release.

Grumbling about the price, however, is not permitted. Even if you ignore the iBook's creative design and snug fit and finish, the $1,599 iBook is a bargain when compared with Windows laptops. The least-expensive Dell Inspiron, for example, is $1,799, doesn't include Ethernet, and contains a ridiculously slow 366MHz Celeron CPU. And although Gateway's cheapest portable is $1,499, its Celeron-based processor is even slower.

Furthermore, the iBook is easily worth its price if, as the iMac has shown, burning technopassion can be slaked by a mere purchase. Apple's iBook is much more than just a portable iMac; it's a long list of surprising delights. And if first impressions prove to be true, the iBook may be the megabyte megahit that gives portable technology a jump start into the year 2000. **m**

All the Right Keys
Apple's removable full-size keyboard is a sure fit for big hands.

01/01/00

Crash

Bomb

Disruption

Safe

Breakdown

oxygen and pumped back into

Failure

Collapse

Hang

AT THE STROKE OF MIDNIGHT ON JANUARY 1, YOU WON'T HAVE TO WORRY ABOUT YOUR MAC

—OR WILL YOU?

UNLESS YOU'VE SPENT THE LAST FEW YEARS STRANDED on a desert island, chances are you've felt the wave of panic sweeping the world regarding computers and the year 2000. It seems like everyone is preparing for the day when computers *might* freeze or go haywire, as banks, hospitals, airports, and the PC empire frantically try to anticipate and forestall the damage the year 2000 may bring to businesses around the world.

The bottom line: at the stroke of midnight, January 1, 2000, some computers and other digital systems—such as ATMs, security equipment, communications services, power plants, and industrial automation—will stop working.

At their most basic, Y2K (yes, that's short for "year 2000") problems are simple to understand: if a system doesn't handle dates properly, it may become confused by years ending with "00." Systems that correctly handle dates past the year 2000 are considered Y2K-compliant.

In the real world, Y2K problems could range from the trivial to the catastrophic. Systems may invalidate credit cards, destroy records, shut down power grids, or assess decades' worth of late fees for that library book on your nightstand. And the damage might not stop there. Digital technology is a part of our everyday lives—it's in our coffee-makers, our cars, and even our telephones. As a result, assessing the *full* potential impact of the year 2000 is a daunting task. No one knows how widespread or significant these problems might be, especially on a global scale.

But forget about the globe. What about your *Macintosh?*

Your Mac and the Millennium

First, breathe a sigh of relief: even the oldest Macs can deal with dates from January 1, 1904, through February 6, 2040, so there's no fundamental year-2000 disaster lurking inside your Macintosh. If your computer is running system software released in the last decade—System 6.X through Mac OS 8.6—it can handle dates from 30,081 B.C. to A.D. 29,940. The BSD Unix that undergirds Apple's recently released Mac OS X Server supports dates through January 18, 2038.

And as for the year 2040, there's an interesting explanation behind Apple's odd expiration date. The original Mac development team chose midnight, January 1, 1904, as the start of the Mac calendar—in part because it's mathematically convenient to have a calendar system start on a leap year, which 1900 was not. And since the calendar was built to cover approximately 136 years, your Mac OS won't expire until the start of the year 2040.

Because of all this, Apple's a bit smug about the Macintosh and the year 2000—the company even aired a commercial about Y2K during the 1999 Super Bowl. Apple has also assembled a sizable Y2K statement on its Web site (www.apple.com/about/year2000/), indicating which hardware components and operating systems the company has tested.

However, even though your Macintosh hardware and OS are ready for the year 2000, that doesn't mean your software—especially custom databases, macros, and spreadsheets—will function correctly once the new year arrives.

Of Errors and Expectations

Fundamentally, all Y2K problems stem from a computer system's inability to correctly process century information in dates. Some errors arise because the computers are dealing with incomplete date information, such as years expressed with only two digits. In such cases, computers must make assumptions about that information to use it at all. (See the sidebar "It Could Happen to You.")

Some programs may interpret dates differently than you'd like. If you enter a date in the format "1/31/00," a database program may read the date as January 31, 1900, even if the current date is well into the twenty-first century. Although this confusion can be annoying, technically you've entered a date with no century information—it might as easily refer to the year 1300 as the year 2000—and you have to hope your computer is smart enough to know which century you mean. However, that same program *would* have a Y2K problem if it misinterpreted a date *with* century information. If entering "1/31/2000" doesn't produce the intended result, you've got trouble. To avoid ambiguity, get into the habit of using four-digit years when entering dates to help isolate Y2K problems.

Safeguard Your Software

Even though the Mac OS doesn't have a problem interpreting far-reaching dates, that doesn't mean your soft-

BY GEOFF DUNCAN

ILLUSTRATIONS BY STUART BRADFORD

ware will handle the year 2000. The fact is, not all programs were created to take advantage of the Mac's Y2K savvy.

Frequently, you'll find that applications used on the Macintosh may not be able to use the Mac's built-in date capabilities (see the sidebar "Proceed with Caution"). Similarly, your Mac OS programs may inherit date problems when you use files from other operating systems or those produced by programs with Y2K problems.

The most-common—and most-troublesome—Y2K concerns for Macintosh users are in customized software and scripts. Spreadsheets, databases, scripts, and macros built with everything from FileMaker Pro, Microsoft Excel, and AppleScript are all prime candidates for date-related snafus. It's not that these applications aren't ready for the new year (although some have isolated issues) but that certain folks who use them to build special formulas and macros may not know how to handle the year 2000 correctly. (See the sidebar "It Could Happen to You.")

Be Safe, Not Sorry

Before you panic, take comfort in the fact that you're using a Mac. Aside from some minor software tweaks, your faithful Mac should be ready to go when the big apple drops. But to be on the safe side, keep track of the versions of each application and any special features you've created, such as sorting formulas, spreadsheet macros, and scheduling shortcuts.

Satisfaction Guaranteed Just to be safe, check with the makers of all the software you use—from word processors and graphics applications to accounting packages and backup programs—to see if the programs have been properly tested for the date change and if any problems were found. Most companies dedicate a section of their Web site to product-specific Y2K information (also see the sidebar "Proceed with Caution"). Generally, programs that manipulate date information, such as genealogy software and spreadsheets, are more liable to suffer Y2K mishaps than software such as an Adobe Photoshop filter that never considers dates.

If a program has problems, a corrected version may be available,

PROCEED WITH CAUTION

CHECK THE CURRENT Y2K STATUS OF ALL YOUR MAC APPLICATIONS

Your Mac may not have been bitten by the Y2K bug, but that doesn't mean that your files and documents are immune to Y2K corruption. Consult our application checklist to make sure your essential programs are ready to ring in the new year.*—RICH BARRON and www.macnologist.com

Company: **Apple Computer**
Product: **Cyberdog**
Version: **2.0**
Problem: In e-mail messages and newsgroup postings, Cyberdog will use a three-digit year in the date header of outgoing messages after 1999.
Solution: Download a patch from www.cyberdog.org.

Company: **CE Software**
Product: **QuicKeys**
Version: **Prior to 3.5.3**
Problem: The Timer Options control panel displays years in two-digit format and does not correctly trigger events in 2000.
Solution: Download the free 3.5.3 update from www.cesoft.com.

Company: **CE Software**
Product: **QuickMail Pro Client**
Version: **Prior to 1.5.4**
Problem: Unknown.

Solution: Download a free update from www.cesoft.com.

Company: **CE Software**
Product: **QuickMail Pro Server**
Version: **Prior to 1.1.1**
Problem: Unknown.
Solution: Download a free update from www.cesoft.com.

Company: **Claris**
Product: **Emailer**
Version: **1.X**
Problem: Starting January 1, 1999, the year 1999 is displayed as 1919 on incoming e-mail.
Solution: In Emailer's preferences, turn off Use Sender's Date/Time for received mail, or upgrade to version 2.X by contacting the original developer at www.fogcity.com.

Company: **Connectix**
Product: **Virtual PC**
Version: **Prior to 2.1.1**

Problem: The program cannot handle the leap year of 2000.
Solution: Download the free 2.1.1 update from www.connectix.com.

Company: **DataViz**
Product: **MacLinkPlus Deluxe**
Version: **Prior to 10.1**
Problem: No specific problem is stated, but the 10.1 update lists Y2K compliance as a new feature.
Solution: Download the free 10.1 update from www.dataviz.com.

Company: **FileMaker**
Product: **FileMaker Pro**
Version: **Prior to 2.1**
Problem: If a year in a date field is entered as two digits, the program assumes it's a twentieth-century date. More info is available at www.filemaker.com.

Solution: Manually convert two-digit years to four-digit years, or upgrade to File-Maker Pro 3.0v5 from the company's Web site.

Company: **FileMaker**
Product: **FileMaker Pro**
Version: **Prior to 4.1v2**
Problem: The TextToDate(date) calculation has been reported to register two-digit years as being in the 1900s.
Solution: Download the File-Maker Pro 4.1v2 English Updater to fix nonspecified Y2K date-handling issues (www.filemaker.com/about/year2000directory.html).

Company: **Global Village**
Product: **GlobalFax**
Version: **Prior to 2.6.8**
Problem: Users are unable to use the Send At feature to schedule faxes for years beyond 1999.
Solution: Download the free 2.6.8 update from www.globalvillage.com.

Company: **Global Village**
Product: **Global Village or**

Company: **PowerPort 56K PC Card Software**
Version: **Prior to 3.0.6**
Problem: The Send At dialog box does not display dates that are ten years from the current date.
Solution: Download the free 3.0.6 update from www.globalvillage.com.

Company: **Insignia Solutions**
Product: **SoftAT**
Version: **All versions**
Problem: Each time the program is started in the year 2000, the date in the DOS and Windows 3.1 Date command is set back to April 1, 1980, and must be manually set ahead to the proper date.
Solution: There is no solution for this product. The user must upgrade to SoftWindows 98, SoftWindows 95 V.5, or RealPC 1.0, all of which run only on PowerPC-based Macs.

Company: **Insignia Solutions**
Product: **SoftPC**
Version: **All versions**
Problem: Each time the program is started in the year

* If a product is listed with "unknown" problems, this means the software has not been government certified as Y2K compliant, but does not necessarily mean that the version is flawed with Y2K errors.

TYPICALLY THE TRAUMA OF Y2K WON'T crash your system, but it may cause programs to behave oddly or present misleading information. A spreadsheet may calculate ages or durations incorrectly because it fails to use built-in date routines, or a database might sort or display information in unexpected ways, even if it's processing dates correctly.

Calculating the Problem Since a Y2K bug can creep up anywhere, we tracked a Microsoft Excel spreadsheet of a landscaping and horticultural business that operates a dozen vehicles and tracks mileage, depreciation, maintenance costs, and more. The owner's son created the original spreadsheet in the early 1990s, using Microsoft Excel 3.0 on a Mac SE.

We found that when the business acquires a vehicle with a model year greater than 1999, the age calculations will produce incorrect results, regardless of whether the years are entered in the two-digit ("00") or four-digit ("2000") format. In fact, because the owner's son didn't use Excel's built-in data capabilities when he created the formula, this spreadsheet produces incorrect results for *any* four-digit year, before or after the year 2000.

Users with modest Excel experience can correct this formula, but spreadsheet calculations are intimidating and arcane to many people. One solution would be to rework the spreadsheet (under Format: Cells: Number) so that the program treats data in the Model Year column as dates and then to change the calculation so that it uses built-in date routines.

Dates Gotta Hurt Databases are also subject to Y2K mishaps and may even have Y2K problems that derive from organizational policy rather than computational error. For example, help-desk consultants at a community college in the state of Washington track technical-support incidents in a database, which assigns each incident a unique ID number.

The database creates the incident IDs with the ID number beginning with the last two digits of the year, followed by two-digit representations of the month and day. In 2000, the database will continue to assign correct ID codes, but how people *use* the ID numbers will create a Y2K glitch. When consultants start a shift, they search for incidents assigned to them, sorting so that important, recent incidents are listed first. Once the year 2000 begins, new incidents will sort to the bottom of the list instead of the top. Although it would be a trivial task to change the ID number format so that incidents sort correctly, the ID numbers are used by other departments, including one that employs a Web-based tracking system for internal billing. Any changes would have to be approved by several groups, entailing weeks of meetings and bureaucratic coordination.

One solution might be to investigate different ways to sort the database so that users see the results they expect without having to change the ID numbers; however, this may create additional problems for other database users.—GEOFF DUNCAN

2000, the date in the DOS and Windows 3.1 Date command is set back to April 1, 1980, and must be manually set ahead to the proper date.
Solution: There is no solution for this product. The user must upgrade to SoftWindows 98, SoftWindows 95 V.5, or RealPC 1.0, all of which run only on PowerPC-based Macs.

Company: **Insignia Solutions**
Product: **SoftWindows**
Version: **1.0.2 for 680X0 Macs; 1.0.3 for Performas; 3.0.3 for Power Macs**
Problem: Each time the program is started in the year 2000, the date in the DOS and Windows 3.1 Date command is set back to April 1, 1980, and must be manually set ahead to the proper date.
Solution: There is no solution for this product. The user must upgrade to SoftWindows 98, SoftWindows 95 V.5, or RealPC 1.0, all of which run only on PowerPC-based Macs.

Company: **Intuit**
Product: **QuickBooks and QuickBooks Pro**
Version: **Prior to 4 M12**

Problem: A fatal system error will occur if you enter a post-2000 date in any field on or after January 1, 2000.
Solution: Update your software to version 4 M12 by October 31, 1999, because technical support for older, nonupdated versions of QuickBooks will not be available after this date. See www.intuit.com for more information.

Company: **Intuit**
Product: **Quicken**
Version: **98 prior to R5**
Problem: While the program itself is compliant, online banking will not work past September 5, 1999.
Solution: Release 5 enables online-payment functionality for dates after September 5, 1999. Download the free update from www.intuit.com.

Company: **Microsoft**
Product: **Excel**
Version: **5.0**
Problem: MS Query accepts two-digit years for an ODBC query but always assumes they're twentieth-century dates.
Solution: Always use four-digit years for queries based upon date data.

Company: **Microsoft**
Product: **Excel**
Version: **98**
Problem: Some wizards are available to watch over date input to keep it Y2K compliant.
Solution: Download the free updates from www.microsoft.com.

Company: **Microsoft**
Product: **Outlook Express**
Version: **4.0**
Problem: Received messages that have a two-digit year in the date field are assumed to have been sent in the 1900s.
Solution: Upgrade to 4.01 from www.microsoft.com.

Company: **Microsoft**
Product: **PowerPoint**
Version: **4.0 through 4.0c**
Problem: Opening PowerPoint 98 files in PowerPoint 4 for the Mac may cause two-digit years to display as "1XX" if the files were created after 1999 and you're using the Update Automatically date format.
Solution: Do not use two-digit years with the Update Automatically feature, or resave PowerPoint 98 files as PowerPoint 4 files.

Company: **Microsoft**
Product: **Word**
Version: **6.XX**
Problem: All two-digit shortcuts for dates are assumed to be in the twentieth century except for the year 00, which is interpreted as the year 2000. This can be seen when you use table date sorting, quote fields, custom document properties, and other higher-level date-handling functions but not when you use more-common functions such as inserting a date from a menu or using date fields.
Solution: See www.microsoft.com/support/ for more details and workarounds.

Company: **Novell**
Product: **NetWare for Mac**
Version: **3.12 or prior**
Problem: Unknown; Novell will not test these versions.
Solution: Upgrade to version 3.2 or 4.2 from www.novell.com.

Company: **Now Software/ Qualcomm**
Product: **Now Up-To-Date**
Version: **2.1**
Problem: This program displays the wrong year when printing events in the year 2000.
Solution: Upgrade to the fully compliant version, 3.6.5, from www.now.qualcomm.com.

Company: **Pegasus Software**
Product: **Pegasus Mail**
Version: **2.21**
Problem: The program has a minor cosmetic defect that will not prevent normal day-to-day operation after the year 2000.
Solution: Upgrade to the next version when it becomes available at www.pegasus.usa.com.

Company: **Prairie Group Software**
Product: **DiskTop**
Version: **4.5.2**
Problem: The program is not able to find files by date in the year 2000 or beyond.
Solution: Registered users will be notified of updates and upgrades.

List compiled by freelance writer RICH BARRON. For the most–up-to-date news about Y2K compliance, log onto www.macnologist.com/y2k/.

THE FINAL COUNTDOWN

THANKFULLY, OUR MACINTOSH hardware and operating systems are ready for the year 2000. But what about all those applications and files? Luckily, you won't have to leave the fate of your Mac to the Millennium Gods. In fact, there are a few things you can do to prepare for the dreaded date.

It's a good idea to track the latest 2000 news and run periodic system checks; you can also safeguard your Mac by performing the following tasks. Remember, always back up your computer before beginning the following tests and make sure you have the latest updates to your software. These tips are especially important if you're running Linux—rather than the Mac OS—on your Mac.

Test Your Macintosh

Task 1 Turn off any automated backup software or schedulers. Since these tests involve changing dates on your Mac, it's possible that your computer will think past appointments should be deleted, browser cookies should expire, or the wrong files should be backed up. The safest way to run these tests is to work on duplicate test files and then throw away the duplicates when you're done.

Task 2 Open the Date & Time control panel and set it for 11:58 p.m., 12/31/99. Turn off your computer for at least three minutes. This will prompt the operating system to roll over to the year 2000 while your computer is turned off. If the transition is successful, reset the control panel to the above date and time and let the transition occur with the computer turned on. If the OS fails to roll over to the year 2000, you have an OS-level Y2K problem.

Task 3 With your Mac set in the next millennium, you can start looking for problem programs and data files. Test all of the date formats available with two-digit and four-digit years. Save and close files, and relaunch them. If possible, import, export, and run calculations on files with dates in short and long formats. Make sure that two-digit 1900 dates are not accepted as 2000 dates and vice versa. Sort the files to make sure that a year-2000 date is seen as more recent than a 1999 date. Also look through a copy of your actual data files for the same problems.

Task 4 Duplicate the previous tests with the following dates:
01/01/1999 Some applications start having date-related problems a year earlier than expected.
09/09/1999 If the date is shortened to 9999, it could cause problems with some files or applications.
12/31/1999 "Tomorrow" should be seen as 01/01/2000 in all applications that use dates.
01/01/2000 The year 2000 should follow 1999.
02/29/2000 The year 2000 is a leap year. Make sure applications don't roll over to 03/01/2000 from 02/28/2000.
01/01/2001 Some applications might misbehave in 2001 and beyond.

Task 5 Upon completion, set the date back to the present time, enable any disabled software, and trash your test files. Keep a watchful eye for any problems that testing may have introduced.—RICH BARRON

but it's probably the most recent release with an upgrade fee. And those of you who own older Macs may find that some new versions are available only for PowerPC-based Macs or that the software requires more RAM or disk space than your current Macintosh can provide.

With older programs, you may find that although the software has known Y2K problems, the company is out of business or no longer supports the product. Again, if you can't work around it, you'll have to switch to another program.

Unavoidable Irks If you use customized databases, scripts, or macros, you need to figure out how they'll handle the year 2000. There are some general Y2K testing procedures (outlined in the sidebar "The Final Countdown") that can help you start troubleshooting. Otherwise, contact the original creator (whether that's a consultant, a shareware author, or someone down the hall) to see if they've reviewed the program for any snags or problems.

The Last Word

Don't let this article fill you with trepidation: the Macintosh is remarkably well prepared for the year 2000, and the vast majority of Mac programs won't have difficulty making the transition to the new year. However, the Mac has no special immunity to the potential crisis ahead and you shouldn't ignore the threat of Y2K incompatibilities. The best preparation you can do is to run our recommended tests on your Mac; check out your software's Y2K status; and then sit back, relax, and grab that bottle of bubbly from the fridge. Your Mac will still be with you next year. **m**

GOOD TO GO

These products have no known Y2K problems. Check each company's Web site for the latest information.—RICH BARRON

Company: **Adobe Systems**
Web site: **www.adobe.com**

    Illustrator 6.0 and later
    PageMaker 6.5 and later
    PageMill 2.0 and later
    Photoshop 4.0 and later

Company: **Aladdin Systems**
Web site: **www.aladdinsys.com**

    StuffIt Expander 4.0 and later

Company: **Apple Computer**
Web site: **www.apple.com**

    AppleWorks 5.0 and later
    ClarisWorks 5.0 and later

Company: **Dantz**
Web site: **www.dantz.com**

    Retrospect: All versions

Company: **Dr. Solomon's Software**
Web site: **www.drsolomon.com**

    Virex: All versions

Company: **Macromedia**
Web site: **www.macromedia.com**

    Director 6.5 and later
    FreeHand 8.01 and later

Company: **MicroMat**
Web site: **www.micromat.com**

    TechTool Pro 2.0 and later

Company: **Netscape**
Web site: **www.netscape.com**

    Navigator 2.02 and later
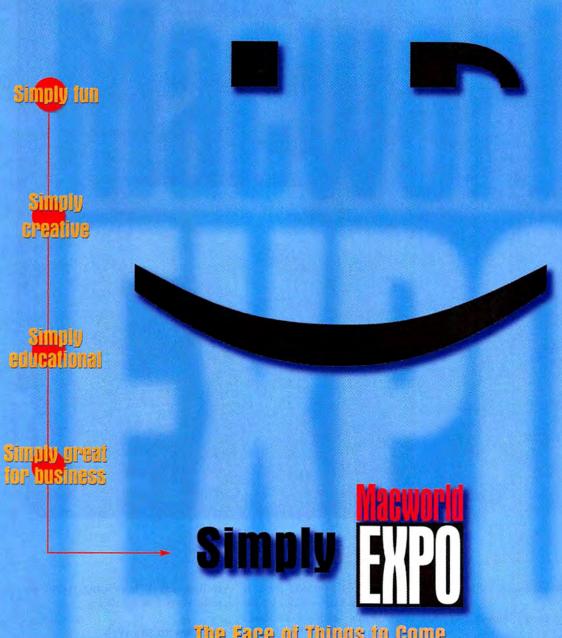
Company: **Quark**
Web site: **www.quark.com**

    XPress 3.32 and later

Company: **Symantec**
Web site: **www.symantec.com**

    Norton Antivirus 5.0 and later
    Norton Utilities 3.5.1 and later

C.M. CHAPMAN
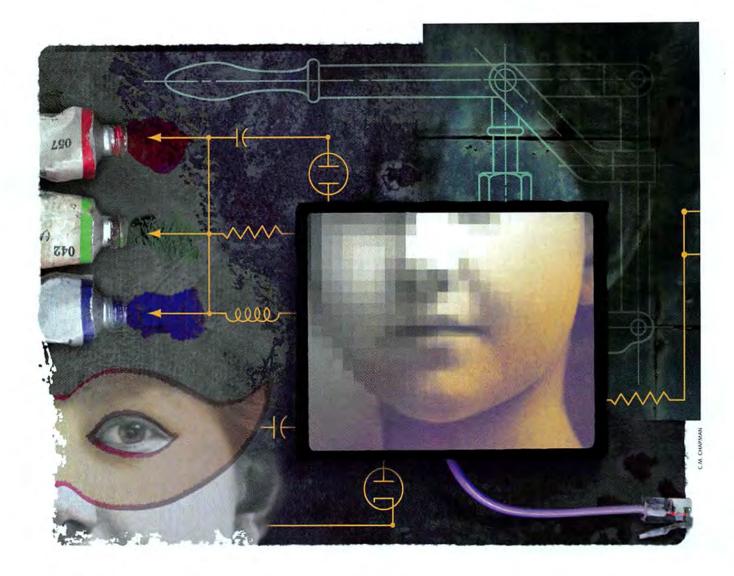
hen it comes to the Web, Adobe Photoshop has always been a program fraught with contradictions. It's probably the most popular tool used by people in the Web-design and -graphics businesses, whether it's to shape images for the Web or to sketch out a Web-site design before implementing it in HTML code. Despite all that, the flagship product of Adobe Systems (800/492-3623, www .adobe.com) has never been particularly Internet-savvy—a situation that has led to the creation of a whole industry based on plug-ins and programs that perform the vital jobs that Photoshop simply doesn't do.

But as of version 5.5, Photoshop has finally embraced the Web. Sure, this $129 upgrade for owners of Photoshop 5.0 or ImageReady 1.0 ($610 for new buyers)—which will be available by the time you read this—adds some features that will be attractive to Photoshop's traditional-print fans (see the sidebar "Not Just for the Web"), but the bulk of the changes to the venerable image editor are meant to satisfy the long-suffering Web-graphics community.

How'd they do it? Basically, Adobe rolled in most of the features found in the Web-graphics product the company released last year—Adobe ImageReady. In a move that shows both how far Web design has come and what a misstep leaving Web features out of Photoshop proved to be, Adobe will now make ImageReady available *only* as part of the Photoshop 5.5 package.

A new version of this program, ImageReady 2.0, will be bundled with Photoshop. It handles higher-end tasks, such as Web animation, and other fancy techniques, such as using JavaScript rollovers and image slicing.

Window to the Web

With Web graphics, you've always got to walk a tightrope between creating high-quality images and making ones that download quickly over slow modem lines. Web designers work primarily with JPEG files (for photographs) and GIF files (for text, logos, and other graphics with large blocks of solid color). Careful tweaking makes all the difference with images saved in either of these formats. The more control designers have when making trade-offs between beauty and speed, the better.

Until this newest version, Photoshop lacked that control, so most designers instead used Photoshop plug-ins, such as

BY JASON SNELL

Photoshop *D*iscovers the Web

WITH VERSION 5.5, ADOBE'S IMAGE EDITOR FINALLY GETS INTERNET-SAVVY

the $50 ProJPEG and $70 PhotoGIF from BoxTop Software (662/263-5410, www .boxtopsoft.com), or programs such as ImageReady and the $199 Fireworks 2.0 from Macromedia (800/457-1774, www.macromedia.com). These tools allowed designers to manipulate the file size and quality of JPEG and GIF images, with immediate visual feedback. However, none of them are able to match Photoshop's all-powerful image-editing features. As a result, prepping graphics for the Web often involves constant switching between Photoshop and a Web-savvy application.

The biggest addition to Photoshop 5.5 is the Save For Web menu item, located on the File menu. Choosing Save For Web doesn't bring up the usual Save dialog box; instead, a large window appears that lets you modify your image in various important ways. This won't be exotic to anyone who has used Macro-

media's Fireworks (see the screen shots, "Separated at Birth"), which offers an almost identical interface. ImageReady 2.0 also has this feature.

JPEG Mojo In the Save For Web window, you can scale the level of quality (from 0 to 100) for files in the JPEG format. As you move the Quality slider toward 0, you'll see the quality of your image drop—the more compressed a JPEG becomes, the more blocky image artifacts you'll see—but in the lower left corner of the window, you'll see its file size drop as well. By clicking on the window's 2-Up or 4-Up tabs, which let you compare two or four versions of your image (with different JPEG and/or GIF options selected) in the same window, you can quickly compare different settings.

GIF Control Some of Photoshop's best new features involve perfecting GIF images. Unlike JPEG files, which

use millions of colors, GIF images are limited to a palette of only 256. In order to make a GIF look good, then, you need to pick the right colors for the job. Photoshop 5.5 gives you an impressive amount of control over GIF images' characteristics.

As in ImageReady 1.0, Photoshop's Save For Web window lets you see and control all the colors in a GIF image's palette. By cleverly controlling the palette of a GIF file, you can dramatically reduce the file size. The first thing Photoshop must do is take your source image and throw away all but 256 of its colors. To make this easier, the program lets you choose from a series of preset palettes, including not only a "Web-safe" palette but also an Adaptive palette, optimized for the colors that appear most often in the image, and a Perceptual palette, weighted toward the colors in the

Photoshop *Discovers* the Web

image that the eye notices most.

Although choosing one of these palettes is a good shortcut to creating a fairly small, good-looking GIF file, perfectionists will want to make even more changes. After all, just because you *can* have as many as 256 colors doesn't mean it's a good idea. The fewer colors you have, the smaller the file size of the image and the shorter its downloading time.

One option in the Save For Web window helps you slim down your colors by

Separated at Birth
Many of Photoshop 5.5's new features will look very familiar to Macromedia Fireworks users. For example, the new Save For Web window (top) offers features also available in Fireworks' similar Export Preview window (bottom), such as the ability to compare up to four versions of an image with different compression schemes.

directly controlling the number in your GIF image. We took a sample image with 204 colors and knocked it down to 64 colors. In the process, the image's size fell from 15.3K to only 9.3K.

Palette Power A limited color palette may make a faster-downloading image file,

but it can also make a deathly boring one. One way to approximate a more expansive variety of colors is through *dithering*—simulating a color by placing dots of two other colors close together so that from a distance, they appear to be a third color.

Photoshop 5.5 offers three different dithering effects. It also allows you to set a dithering percentage, so you can vary the amount of dithering in your image and see how it affects image quality and file size. Although it's nice to have these options, avoid using dithering if you can. It usually increases file size.

For the ultimate in color control, Photoshop lets you edit the GIF color palette. This is a powerful and quite useful feature, allowing you to *lock* colors that you don't want to change under any circumstance (for example, the colors in a company's logo). You can also select individual colors and shift them to their nearest Web-safe equivalent (so they won't dither, even on a monitor that can display only 256 colors), or delete colors one by one from the palette to simplify your images and reduce their file sizes.

One Innovation The features in the Save For Web window are new to Photoshop, but it's only fair to point out that they're not new altogether—most of them will be familiar to users of ImageReady or Fireworks. There is one unique feature offered for the first time in Photoshop 5.5: the *lossy GIF*.

Adobe's lossy-GIF algorithm cleverly exploits the way that GIF images are compressed, by taking large areas of a single color and describing them in shorthand, rather than pixel by pixel. This lets it create a lower-quality image with a smaller file size. As you increase the lossy compression, you'll start to see distortions, including 1-pixel-high horizontal streaks across your image, but you may not mind when you're in a pinch.

Photoshop's New Pal
Artfully exporting files in the GIF or JPEG format is far from the be-all and end-all of Web-graphics production.

There are several Web-specific features of vital importance to Web-graphics professionals that don't appear in Photoshop 5.5. Instead, those features are a part of the much improved ImageReady 2.0.

Tight Integration Although Photoshop and ImageReady are clearly meant to work together, they've also been developed to work successfully apart. Many users used to grumble about ImageReady's lack of image-editing tools, such as the rubber stamp and the airbrush—features that were available in its competitor Fireworks. If you were among those people, you'll be happy to see the program's more comprehensive set of image-editing tools. Even though everyone who owns Image-Ready 2.0 will now automatically have Photoshop too, these tools will save you from toggling back and forth between the two programs just to do minor touch-ups.

For those times when you must toggle, switching between the two applications is now a much easier task too: both fully understand the Photoshop file format, and clicking on a button at the bottom of each program's tool palette opens the currently active document in the other program.

Slicing and Dicing Most Photoshop users don't spend a lot of time taking the images they've carefully created and cutting them up into little bits. Yet the practice of *slicing* an image is quite common on the Web, since one giant image is less efficient in table-based HTML layouts and JavaScript-laden interactive designs than the same image cut into sections.

In version 2.0, ImageReady matches the slicing versatility of Fireworks 2.0: you can select areas to be sliced up, either by dragging guides out from a ruler or by choosing the Slice tool and drawing a rectangle over a particular area. You can choose a different GIF and JPEG setting for each slice. This is particularly useful if you've designed a Web page as a graphic and distinct parts of it (say, the photograph in one corner and the text in the other) require different compression methods.

Simple JavaScript You'd think that creating graphics and wading into the world of HTML coding would be two separate jobs. But with so many of the bells and whistles on Web pages being the result of JavaScript *rollovers*, images that change when you move your mouse over them, it makes sense that ImageReady includes some HTML-related features.

You can still separate the jobs—a Photoshop user can create a big image or

Quick-'n'-Easier Masking

Whether you're working on images destined for the Web or for print, selecting exactly what you want is never easy. Fortunately, Photoshop 5.5 offers tools that at least make it *easier*. One of these is the new Extract feature. What makes Extract truly special is that it performs *color decontamination* (removes the strange halo) along the edge of your selection. This is important because the success of any selection is based entirely on the transition between what is selected and what is not. A lousy transition means that you get some of the original background along with the object you actually want. This line along the edge of an object is a dead giveaway it came from somewhere else.

Note that the Extract feature doesn't make a mask. Rather, because it needs to remove the background color from edge pixels, it actually deletes the background. This is unfortunate because using Extract rarely results in a perfect selection and you'll need to do some fine-tuning. For this reason, it's a good idea to duplicate your layer before using Extract. Again, no one ever said it was going to be easy. Just easier.—DAVID BLATNER
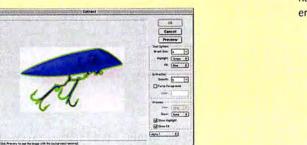
1

When you select Extract from the Image menu, the Extract dialog box appears, containing a proxy of your image that you can work on.

2

Use the brush tool to paint along the edge of the object you're trying to select. The default color of this "paint" is green, but you can change it to red or blue if your image has a lot of green in it. If you make a mistake, you can erase some of the "paint" with the eraser tool.

3
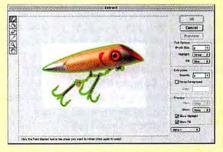
After specifying the edge of the selection, click on the object with the paint bucket tool. This tells Photoshop which side of the green line is the inside—the object itself.

4

Click on Preview to see the extracted object on top of a transparent background. If you like what you see, click on OK. If not, you can make further adjustments to your edge with the brush tool or adjust other settings in the dialog box and preview the extraction again.

Voilà!

In the end, you'll get noticeably better results with less effort. Traditional selection methods, such as using the magic wand, can pick up edge spill and often result in a sharper, less realistic edge (see the example at right). The Extract feature removes the background color from edge pixels, leaving a semitransparent edge, which makes the foreground object blend more smoothly into whatever new background you choose.

Results with the Extract feature

Results with the magic wand

Not Just for the Web

Although the Web publishers of the world have reason to rejoice at the release of Photoshop 5.5, the rest of us—the mere mortals who still have to make a living based on print publishing—can quietly cheer at several features in this upgrade that may make our days easier too.

Carefree Compositing If you do any *photocompositing* (cutting an image out and putting it into another), your nemesis is most likely *edge spill*, where the background of the original image appears as a gritty halo around the composited graphic. Now to the rescue come the new Extract feature and the Background Eraser tool. Both erase pixels relatively intelligently, but, more important, both perform edge-color decontamination—they carefully remove the background color from pixels at the cut-out object's edge.

Where the Extract feature deletes the background color all at once (see the sidebar "Quick-'n'-Easier Masking"), the Background Eraser tool lets you paint away (or erase) the background in a smooth, intelligent way until it becomes transparent. Unfortunately, neither tool works particularly well with really tricky images that contain, for example, breezy blond hair against a sunny golden beach.

Another compositing tool, the magic eraser, gets essentially the same results as using the paint bucket tool with a "clear" fill instead of a color. However, it's too blunt an instrument to be particularly helpful for anything but very rough, first-draft work.

Ultimately, although these new features are powerful, they don't obviate the need for additional masking plug-ins, available from companies such as Ultimatte, Extensis, and Human Software. These still offer features above and beyond Photoshop's, including help in building clipping paths.

Better Text Adobe blundered with its type control in Photoshop 5.0, especially in the rasterizing of small text (which looked terrible). Several features in version 5.5 help fix these problems. Three levels of antialiasing and the option of using fractional widths (most letters aren't an even number of pixels wide) help you set good-looking type at all sizes. Less exciting, but still useful, is the ability to fake bold, underlined, and italic text. Note that if you don't upgrade, Photoshop 5.0 will be able to read type layers that are created in version 5.5 but will ignore all of the new features.

Simple Pleasures Sometimes it's the simple things that are most likely to get an "ooh-aah" response. And this may be the case for you when you open the Automate submenu (under the File menu) and see the new macros contained therein. Picture Package is a boon to any photographer tired of duplicating, rotating, and scaling photos in order to fit several versions of the same picture onto one sheet of film (for instance, when you're creating school photos, where you want a certain number to be wallet-size, and so on).

Similarly, the Contact Sheet feature—which gangs up thumbnail images on a page—contains new options, such as the ability to add file names under a thumbnail and include all the images in nested folders.

If you're not the type to muck about with HTML code and need to get photos on the Web quickly, you'll also appreciate the Web Gallery feature. Select a folder of photos, and Photoshop will automatically convert them to the JPEG file format and generate HTML pages with links between these images and small thumbnail versions of them that it also creates.

One-Minute Monet In a nod toward fine artists, Adobe has included the Art History Brush, which lets you create various impressionistic effects simply by brushing it over your images. Unfortunately, the artsy options—with names such as Tight Short, Dab, and Loose Curl—are a far cry from what you can create in MetaCreations' Painter. With luck, future versions of Photoshop will expand on this tool.

Clearly, the majority of features in this upgrade are oriented toward Web professionals. But there are a few gems that might be just enough to tempt the rest of us to upgrade too.—DAVID BLATNER

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a series of sliced-up ones and send it to an HTML jockey who adds the necessary JavaScript code to make the razzle-dazzle happen. ImageReady 2.0, however, can also generate all the necessary HTML magic by itself. From within ImageReady, you can set up rollovers (even images that change in one place when you move your mouse over a *different* place), and the program will generate an HTML file.

This is a feature that Fireworks 2.0 offers too, and as you might expect, compatibility is an issue. Rollovers generated in ImageReady work well in Adobe GoLive, but they may not in Macromedia Dreamweaver. Rollovers from Fireworks, on the other hand, work in Macromedia Dreamweaver *and* GoLive if you download a template from Macromedia's Web site that lets Fireworks export HTML in the GoLive style.

Jumping GIFs In the past, Photoshop users had to resort to shareware programs such as Yves Piguet's free GIFBuilder to create GIF animations, usually after painfully generating each frame within Photoshop. The arrival of ImageReady and Fireworks changed that by adding robust animation tools. ImageReady 2.0 carries on that tradition, matching Fireworks 2.0 at every step.

You can create animated GIFs by using ImageReady's Animation palette, moving layers (or switching them on and off) to achieve animated effects. For those of us who are too lazy to move items through a series of steps to get the final animated effect we seek, there's ImageReady's Tween command, which uses the information in "before" and "after" frames (for example, a red ball at the bottom of the screen and at the top) to figure out and create what would come in between.

The Last Word
The arrival of Adobe Photoshop 5.5 may mark a major milestone in the world of Web graphics, or it may just be a bump in the road. After years of ignoring the Web, Photoshop has finally gotten Internet-savvy—but is it too late?

Macromedia's competing product, Fireworks 2.0, is powerful and popular. Although its mix of drawing-program and Photoshop-like abilities makes it harder for many people to learn, it also gives the program unique strengths (see *Reviews*, July 1999). It's also tightly integrated with Dreamweaver—an HTML editor that seems to have a lot of momentum, at least for now. On the other hand, if Photoshop and ImageReady can provide most of Fireworks' features in one package *with one price tag*, Adobe may have a major advantage.

Regardless of who wins this battle, one fact can't be denied: Web pros who use Photoshop finally won't have to pay extra to get the basic tools they need. It's been a long time coming, but Photoshop has finally embraced the Web. **m**

Senior Editor JASON SNELL has been writing about Web publishing exactly as long as he's been doing it—since 1993.
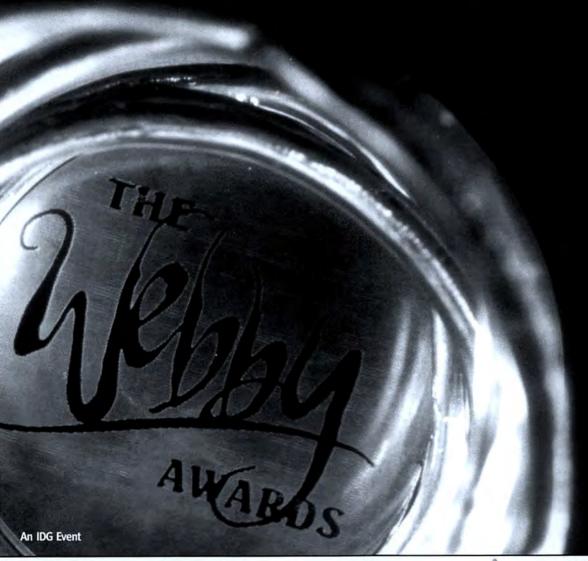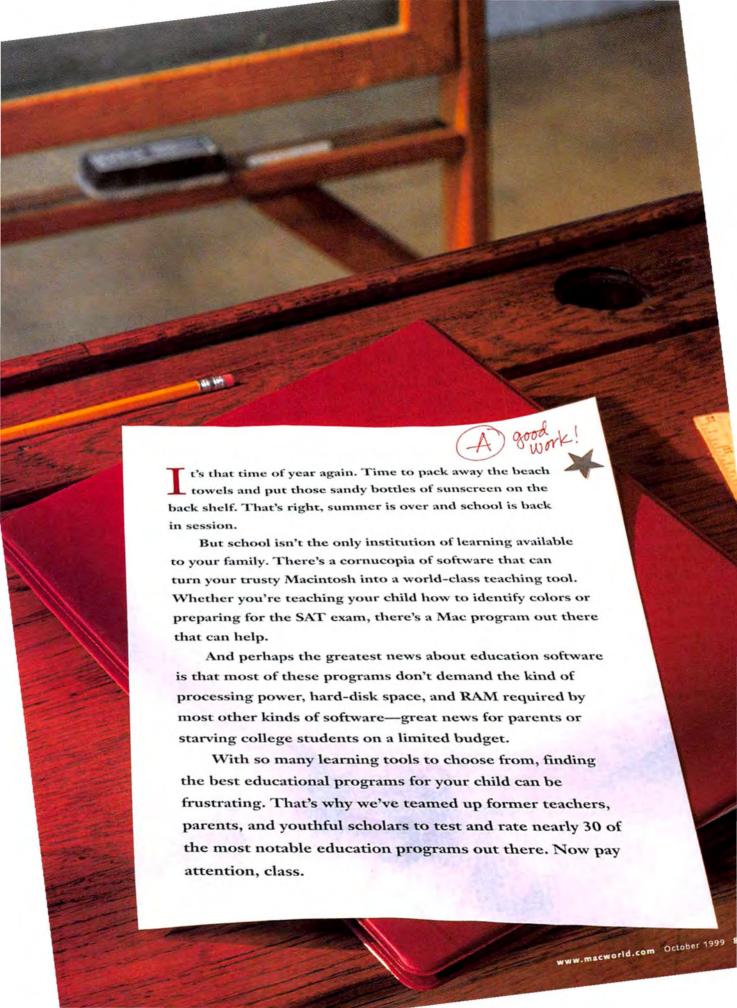
MIND-EXPANDING
MAC TOOLS
FOR KIDS
OF ALL AGES

Get Smart

Photographs by
KEVIN CANDLAND

I t's that time of year again. Time to pack away the beach towels and put those sandy bottles of sunscreen on the back shelf. That's right, summer is over and school is back in session.

But school isn't the only institution of learning available to your family. There's a cornucopia of software that can turn your trusty Macintosh into a world-class teaching tool. Whether you're teaching your child how to identify colors or preparing for the SAT exam, there's a Mac program out there that can help.

And perhaps the greatest news about education software is that most of these programs don't demand the kind of processing power, hard-disk space, and RAM required by most other kinds of software—great news for parents or starving college students on a limited budget.

With so many learning tools to choose from, finding the best educational programs for your child can be frustrating. That's why we've teamed up former teachers, parents, and youthful scholars to test and rate nearly 30 of the most notable education programs out there. Now pay attention, class.

a wealth of software is being released for tykes, proving you're never too young to learn *or* to use a Mac. Preschoolers can learn from software that focuses on basic concepts such as matching, sorting, and pattern recognition, and older children can benefit from programs that teach reading and thinking skills.

Teaching Tots

Even the very youngest pupils—ages two-and-a-half to four—can, with the proper software and supervision, get a head start on learning with a Mac. Although these sprouts have neither the patience nor the acumen for advanced math and phonics drills, they can learn from games that test their ability to count as well as recognize, sort, and match shapes and colors.

Many parents may have had enough of Nickelodeon's Blue's Clues franchise, but kids seem to love this omnipresent pup. That's just one reason to look into Blue's 1-2-3 Time Activities (♦♦♦♦; $20), from Humongous Entertainment (800/499-8386, www.humongous.com)—the other is the educational and entertaining set of activities designed to help children with their counting and matching skills.
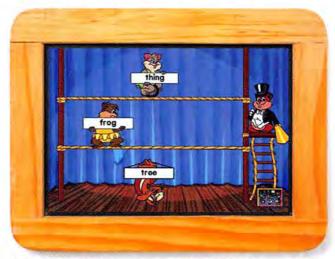
Blue's 1-2-3 Time Activities takes place at a backyard fair where your child and the blue canine can participate in seven games, including Mother May I?, which teaches the basics of addition and subtraction, and the Pattern Parade, which asks kids to recognize patterns of shapes and fill in the missing pieces. Whenever Blue succeeds, she earns one or more Blue Dollars that can be used to purchase pieces of a puzzle. Blue's 1-2-3 Time Activities is a well-thought-out package that kids will play again and again.

Not so successful is the Dally Doo 2 series (♦♦; $13), from Arc Media (416/410-4429, www.arcmedia.com). Not only are these programs' graphics and animation primitive but the authors also appear to have only limited experience with children's education. These discs—covering such topics as animals, colors, numbers, and shapes—are aimed at three- to six-year-olds yet include references to Sherlock Holmes and other characters and concepts that are likely to be foreign to young children. And during a shape-recognition exercise, a sharpened, five-sided pencil is identified as a rectangle. Worse, incorrect answers are met with a jarring honk—hardly the kind of gentle correction that will encourage children to try again.

Aboard the Reading Railroad

Reading programs are among the most popular Mac applications for kids. All parents want their child to read, after all, but teaching reading properly can be daunting. We examined four

Rodent Rivals Pick the correct word in Reader Rabbit's Complete Learn to Read System, and your rodent might win the race.

packages that offer varying degrees of reading instruction—Dr. Seuss Reading Games (♦♦♦; $20) and Arthur's Reading Games (♦♦♦½; $20), from Creative Wonders, a division of The Learning Company (800/716-8506, www.learningco.com); Let's Go Read 2 (♦♦♦½; $45), from Edmark (800/691-2986, www.edmark.com); and Reader Rabbit's Complete Learn to Read System (♦♦♦♦; $70), from The Learning Company.

Arthur's Reading Games and Dr. Seuss Reading Games focus on word recognition, although the Dr. Seuss's ABCs component of the latter coaches kids in letter recognition as well. The Dr. Seuss CD is essentially an interactive, "click on an object and see what happens" version of Seuss's *Cat in the Hat*—entertaining, but lacking a strong instructional component. Arthur's Reading Games focuses more on reading, with two word-recognition games and an activity that helps children learn about sentence structure. Although children will likely learn to recognize certain words through repeated playing of these two amusing, interactive products, they won't absorb the basics of phonics from these discs.

Let's Go Read 2 and Reader Rabbit's Complete Learn to Read System may not be quite as much fun as the reading-games titles, but the teaching elements are far stronger. Both programs coach children on vowel and consonant sounds, help them sound out words, and bolster their vocabulary with new words. Although both are solid programs, Reader Rabbit is more comprehensive, thanks to the bundled material you and your child can use away from the Mac—flash cards, storybooks, and a workbook for practicing reading activities. Let's Go Read 2 teaches the basics of phonics as well as Reader Rabbit does, but portions rely on a speech-recognition system that works only sporadically. Children may quickly become frustrated when the computer ignores their spoken answers.

Think Smart

Designing educational software for several age groups—say, for preschool through junior high—is tricky. If the activities are too difficult, younger children will become frustrated; make the graphics too juvenile or the tasks too simple, and older children will say it's for babies. For the most part, Edmark (800/691-2986, www.edmark.com) manages to strike a nice balance in its Thinkin' Things series, which includes Toony the Loon's Lagoon (♦♦♦♦½; $30) and All Around FrippleTown (♦♦♦♦½; $30).

Although the Thinkin' Things series features charming characters and animation, there's little fluff here—the people who put these programs together seem to understand the way children learn. For example, if a child continues to perform tasks correctly, the program automatically increases the difficulty of subsequent tasks, skipping repetitive interim exercises. Conversely, if a child appears to be having difficulty, the program won't present tougher tasks until that child reaches a rea-

Loony Tune Toony the Loon is your host for this call-and-response music activity from Toony the Loon's Lagoon.

sonable level of success. And most of the Thinkin' Things activities allow two levels of involvement: kids can just play at an activity or actually solve particular problems.

Toony the Loon's Lagoon and All Around FrippleTown are designed for children ages four through eight. Toony helps children with their memory and listening skills through "Simon says"–style auditory games—a character plays a pattern of sounds, and your child is asked to repeat that pattern. For a greater challenge, children can switch off visual clues and repeat the pattern based mostly on the tones they hear. In another activity, children compare and contrast objects (cartoon characters called Fripples), using such factors as color, pattern, and hairstyle. All Around FrippleTown is just as delightful and helps with navigation skills, number sequences, and problem solving. Particularly engaging is the Fripple Cookies activity, where your child must determine the steps Bob and Gaston—two residents of FrippleTown—took to create their sugary creations. Those steps might include rotating and flipping a cookie, applying excessive heat to one side, and taking a large bite out of it—a fun and useful lesson in deductive reasoning that kids are sure to enjoy.

Schoolwork, birthday parties, soccer practice . . . some grade-schoolers' schedules would make a CEO cringe. So it's important to choose educational programs that make the most of children's limited time at the computer. Read on to find our nominees for the back-to-school software honor roll, as well as for some programs that could use some extra help.

Ho-hum History Lessons

In Discover More History (♦♦½; $10), from Arc Media (416/410-4429, www.arcmedia.com), history buffs who are over age nine can take a magical elevator to 12 floors. Each of the stops features various objects; when the player clicks on one, a written summary of a historical event appears and is spoken. After exploring a floor, the budding historian must answer a multiple-choice question to get permission to ascend to the next floor. Unfortunately, the historical descriptions, although well written, often don't relate to the scene. And the lack of creativity and the monotonous game play are enough to make any eighth grader anxious to return to the classroom. (Alas, Arc Media's other titles in the same series—covering math, science, and geography—aren't any better.)

Frankie Goes to School

With Frankie the dog as their faithful companion, first graders will love JumpStart 1st Grade (♦♦♦½; $30), from Knowledge Adventure (800/545-7677, www.knowledgeadventure.com). And since this popular series includes titles for kids as young as nine months, it's never too early to become a fan of Frankie the dog. All the basic learning building blocks are packed into 12 areas, including math, time telling, language, and art. As in the other games in the JumpStart series, Frankie hosts all the fun in and around a colorful schoolhouse (see "Spare Change"). Although most youngsters will enjoy Frankie's lessons, some of the activities may be too difficult for five- and six-year-olds.

Spare Change An animated vending machine in JumpStart 1st Grade's lunchroom helps kids learn how to use and count change.

Pound the Keys Like a Pro

Back in the old days, typing lessons included a rickety typewriter and a tired instructor. But the typewriters have retired and the new typing tool is All-Star Typing (♦♦♦; $30), from The Learning Company (800/716-8506, www.learningco.com). This handy Mac program teaches keyboard techniques, using a series of drills with a basketball theme. Although it's intended for kids from 9 to 12 years of age, keyboard-challenged parents might also want to give All-Star Typing a go.

Puzzling Puzzles

The Thinkin' Things series' Galactic Brain Benders (♦♦♦♦½; $30) and Sky Island Mysteries (♦♦♦½; $30), from Edmark (800/691-2986, www.edmark.com), abandon some of the more childish themes in deference to their older 8-to-12-year-old audience. For example, Galactic Brain Benders helps teach early programming skills by asking children to string together sets of rules to force a particular action, such as creating the field patterns of

a marching band. The program also allows children to experiment with the rules of physics by creating ramps and slick surfaces on a virtual metal table and then rolling marbles about the surface by changing the tilt of the table.

In Sky Island Mysteries, your child becomes the family sleuth by helping investigator Joe Cluesoe solve problems on three floating islands. Like Galactic Brain Benders, Sky Island Mysteries helps kids learn to master a situation—managing an air show, for example—by following rules. Of the two programs, though, Galactic Brain Benders is more likely to appeal to older children.

Charming Mouse on a Quest

Imagine an adorable little rodent in search of a remedy for her ailing grandmother. Well, that's the plot in Mia: The Search for Grandma's Remedy (♦♦♦♦; $30), from Kutoka Interactive (877/858-8652, www.kutoka.com). As Mia's faithful guide, your child must solve nine language-related puzzles to unlock the clues for a successful quest. The dazzling artwork and sound complement the learning tools as children ages five to nine try to decipher where Mia should go next.

Number Magic

Whether it's mastering basic arithmetic or learning fractions, elementary-level math is a must. And although memorizing multiplication tables will never be as fun as playing kickball with friends, these learning tools can make math more enjoyable. Madeline 1st & 2nd Grade Math (♦♦♦; $30), from The Learning Company (800/716-8506, www.learningco.com), proves that even a cultural icon can sometimes be annoying. This two-disc set— for ages six to nine— teaches

basic math skills by using interactive puzzles. The activities are challenging and the graphics are attractive, but Madeline's exaggerated French accent can be hard on the ears.

For preteens, the imaginary world of Gretchen and Wilbur in I Love Math (♦♦♦½; $20), from DK Interactive Learning (888/342-5357, www.dk.com), will get your kids excited about learning math. In this learning game, kids use math skills to save the world from Gretchen

and Wilbur, who've traveled back through time to wreak havoc. In Atlantis, kids must conquer fractions to repair the island's broken water pipes; in the land of the Aztecs, they manipulate shapes to open a locked temple. With four difficulty levels and

Words in Space On I Love Spelling's planet Aquatica, kids earn points by clicking on moving bubbles to spell words.

three play modes, there's plenty to keep older children occupied for hours.

Math Arcade (♦♦♦; $10) is another fun math tool for older children. Arc Media's (416/410-4429, www.arcmedia.com) animated game lets kids choose math-related exercises in four areas: addition and subtraction, multiplication and division, telling time, and pattern recognition. Biff, a Beavis look-alike whose mouth never stops moving, acts as host. And a series of correct answers earns an interesting fact, such as a description of Neil Armstrong's first step on the moon.

Challenging Word Drills

With DK Interactive Learning's (888/342-5357, www.dk.com) I Love Spelling (♦♦♦½; $20), children practice spelling by playing interactive word games on four wacky planets (see "Words in Space"). Like the other games in the I Love series, I Love Spelling lets kids choose a level of difficulty; they can also select particular word groups—animal-related words, for example—to work on.

Interactive Science for Curious Kids

If you're tired of answering your child's endless questions—or you're ashamed to admit that you really *don't* know how rockets work—then My First Amazing Science Explorer (♦♦♦♦; $30), from DK Interactive Learning (888/342-5357, www.dk.com), is just the ticket for young inquiring minds. Kids get to explore and learn scientific facts in eight environments, from city streets to the countryside. They can even perform simple experiments and record their observations in a printable workbook.

no doubt about it. The best parts of high school are the Friday-night football games and the senior prom. But along with these extracurricular activities come a few mandatory geometry quizzes and college-admission exams. Luckily, we've found some nifty tools to help young minds master these skills plus much more.

¿Dónde está el baño?

Students traveling abroad might need a refresher course in Spanish 101. And with 51 Languages of the World (♦♦♦; $30), from Transparent Language (800/752-1676, www.transparent.com), the learning doesn't stop with the Romance languages. Master the common European languages, along with Chinese, Japanese, and Korean. For eager students, there are even lessons for Tagalog, Turkish, and Thai. And even though Yiddish is included, the best jokes simply can't be translated.

The core goal of 51 Languages is simple: immerse the student in the language through conversation. Users of 51 Languages can also record their own voices in order to compare their pronunciation with that of prerecorded native speakers. Helpful panels display the meanings of, and grammatical information about, the words, but the lack of documentation makes learning the program more difficult than mastering a foreign language.

Explore English

Discover More English (♦♦; $10), from Arc Media (416/410-4429, www.arcmedia.com), is designed to improve your child's understanding and appreciation of the English language. Journeys to historical sites both real and fictional—Stonehenge, Elizabethan London, Frankenstein's castle—accompany an itin-

erary sprinkled with facts about English literature and grammar.

As with Arc Media's other Discover More lessons, a magic elevator stops on floors hosting different historical scenes. When you click on a particular object, a small animation accompanies some literary or grammatical nugget. Entry to

Magical History Tour   Dr. Frankenstein's laboratory is just one of the venues your child will visit on Discover More English's historical tour.

the first floor is free; after that, participants must answer a one-question quiz on each level to ascend to the next level.

The graphics are decent, but the animations are crude and unlikely to appeal to the preteen crowd, at whom the product is aimed. Our advice: put the $10 toward tickets to Shakespeare.

Count on It

Like to help out with your teenager's math homework but can't remember the difference between a discriminant and a derivative? Mathematics software may be the answer.

We looked at three math packages for high schoolers: Princeton Review Math Library (♦♦♦♦; $40) and Princeton Review Algebra Edge (♦♦♦½; $40), both from The Learning Company (800/716-8506, www.learningco.com), and Math Advantage 2000—High School (♦♦½; $40), from Aces Research (510/683-8855, www.acesxprt.com).

Princeton Review Math Library, a six-CD set, covers a full range of high-school math, from Algebra I through calculus. Each CD contains an individual tutorial covering a separate

Quiz Show   If your kids can beat the nerds in Algebra Edge's game show, they'll be on their way to acing algebra class.

subject. The programs lack the whizbang graphics of other programs in the Princeton Review series, but that doesn't make them any less effective. Each lesson is well organized and provides both solid instruction on basic concepts and good feedback on progress, but the exercises would be more helpful if incorrect answers were explained step-by-step.

Math Advantage 2000 also covers the gamut from Algebra I to calculus. The seven-CD package is accompanied by a workbook that contains hundreds of practice problems. The tutorial section is a tad more stimulating than a math textbook, and the exams state whether the answer is right or wrong. If you make a mistake, though, there's no explanation of what went wrong or the correct way to solve the problem. For general high-school math tutorials, stick with Princeton Review Math Library.

As the name implies, Algebra Edge is focused on Algebra I, divided into two sections: Grade Builder Algebra I and Algebra Smart. Both lessons inject a bit of entertainment into the training sequences by incorporating animated videos, rock-oriented soundtracks, quiz-show games, and narration with an attitude. And since you can customize the lesson sequence, Grade Builder Algebra I can be organized to match your child's algebra textbook. Both Grade Builder Algebra I and Algebra Smart are likely to ease the pain of learning algebra, although the price tag on this package seems a bit steep for a single subject.

Sharpen Your No. 2 Pencil

Sure, the school year is just starting, but it's never too early (or too late) to start thinking about college- and grad-school–entrance exams. Three test-preparation packages for soon-to-be-graduates are certain to get them into exam mode: a crash course, Kaplan Emergency Prep for the SAT/ACT (♦♦♦½; $20), from Knowledge Adventure (800/545-7677, www.knowledgeadventure.com), and two more-comprehensive packages, Princeton Review's Inside the SAT, ACT & PSAT 2000 Deluxe (♦♦♦½; $40) and Inside the GRE, GMAT & LSAT (♦♦♦½; $40), from The Learning Company (800/716-8506, www.learningco.com).

Recognizing that what a standardized test really measures is your ability to take standardized tests, all three offer test-taking strategies, along with vocabulary-building exercises and geometry drills. But Kaplan Emergency Prep for the SAT/ACT takes a friendlier, less intimidating approach than the others, offering a simpler interface and more hand-holding. You may find it a bit too folksy for your tastes, but if you've put off studying until the week before the test or need a last-minute refresher course, this is the package for you.

If you have the luxury of stretching your test-preparation homework over months rather than days, the Princeton Review products will reward you with multiple sample tests, compared to Kaplan's single test, and more-extensive information about college admissions and financial aid. For example, Inside the SAT, ACT & PSAT 2000 Deluxe lets you look up average SAT scores for hundreds of colleges and comes bundled with a companion book on how to get financial aid. Inside the GRE, GMAT & LSAT offers advice on choosing between the new computer-based version of the GRE and the traditional pencil-and-paper version and includes sample tests for both. **m**

Secrets

Mac OS 8.6 Optimization Tricks

GET THE NEW SYSTEM SOFTWARE UP AND RUNNING WITH A MINIMUM OF FUSS AND BOTHER

by Ted Landau

Mac OS 8.6 won't flabbergast you with flashy new features. Instead, what you get is increased stability—fewer crashes—and a faster Mac. That's because Apple has made numerous "under the hood" changes—from improving how the Macintosh processor divides its time among multiple open applications to fixing a bushel of bugs.

Although most users will find updating to this system quick and painless, there are potholes lurking on the road to OS 8.6 success. If you're not alert to the dangers, it can seem as if 8.6 causes more problems than it fixes. Here's how to keep the road as smooth as possible.

Don't Stall at the Install

The first trick is to get the OS to install the way you want it to.

Missing Files Mac OS 8.6 includes updated versions of system software. However, if you use the Mac OS 8.6 Update (available free from Apple's Web site), you'll find that some of this software, such as ColorSync and Macintosh Runtime for Java, doesn't get installed. It's not a bug. Some of the software simply isn't included in the Update. To get the missing software, you have two choices: get the Mac OS 8.6 CD, which includes *all* the files (for $19.95 from Apple if you own OS 8.5; 800/795-1000) or get the additional files as separate downloads from Apple's Web site, at

http://asu.info.apple.com/swupdates.nsf /artnum/n11386. You'll find links to most of these files on the Update page, but in a few cases, you'll have to dig deeper. Two important files that you have to get elsewhere are Apple's OpenGL 1.0 (http://asu.info.apple.com/swupdates .nsf/artnum/n11420) and IomegaWare (www.iomega.com/software/updates .html). As a bonus for going the download route, you get software that's even newer than the versions included on the Mac OS 8.6 CD.

Finally, Apple goofed and forgot to put the updated Internet Access exten-

sion (version 1.3) in the Mac OS 8.6 Update. It's available only on the 8.6 CD. But don't worry, version 1.2 is almost identical.

Files That Won't Install The Mac OS Update Installer can be fussy about what it decides to install. For starters, it won't install newer versions of certain files unless it finds an older version on your hard disk. In a few cases, it won't install the new version even if the old version *is* on your disk. For example, if you've moved Sherlock from its default location in the Apple Menu Items folder, *continues*

Mac OS 8.6 Installer won't install the new version. Similarly, if you've renamed any Mac OS extensions or control panels (perhaps to modify their loading order), these may not get updated. One solution is to restore the original names and locations before updating. Otherwise, you can use Apple's TomeViewer utility to extract the desired files from the Mac OS 8.6 Tome (you'll find it buried in the Update Install Pieces folder) and install the files yourself.

Gone for Good In a few cases, the Mac OS 8.6 Installer deliberately removes files from your disk without replacing them with an update. For instance, it gives the familiar Jigsaw Puzzle the heave-ho. It also disposes of the Desktop Printing Extension—an unnecessary extension that can cause freezes.

Keep It Running Smoothly

Once you've installed the OS successfully, watch out for these obstacles.

Memory Shortage Some applications require about 300K more memory than they needed in Mac OS 8.5. It's a good idea to give a boost to any application that's acting up—select Get Info for the app, select Memory from the Show pop-up menu, and increase the Preferred Size. Sherlock is one program that will benefit from a memory increase of at least 300K if you've added many Sherlock Internet search-site plug-ins.

Font Bug If you're experiencing system crashes, you could have a font problem. Certain older fonts can get corrupted under Mac OS 8.6. Even if you don't have such fonts in your System Folder, you may have one embedded in an application, such as the font your Mac uses to create bullets when you type a protected password. Currently, there are two solutions (and you can use both): Install Diamond-Soft's Font Fixer for 8.6 extension (ww2 .fontreserve.com/update/fontfix.html) or run the Corrupt FOND Fixer application, from Alsoft (www.alsoft.com).

Shutdown Failure You may get an erroneous message when you attempt to shut down with OS 8.6 running on your Mac. The message says that you can't shut down because some applications have not quit. If this message appears even after you've quit all applications, any of various extensions may be the culprit. Try updating SwitchRes 1.5.X to version 2.0 or disabling LibMotosh, if you have either of those extensions.

Crash Course Most remaining problems will likely require an updated version of some software. For example, printing from Adobe PageMaker 6.5.X can cause a crash when you're using Mac OS 8.6 (Adobe is working on a fix). The companion software to G3 processor upgrades (especially upgrades for the L2 cache slot of Power Mac 6400s and 6500s) has been known to cause start-up crashes under Mac OS 8.6. Check for an updated version.

Road repairs are over. It's time to relax and take your new OS for a spin. **m**

Contributing Editor TED LANDAU serves up the latest Mac OS 8.6 troubleshooting tips at his MacFixIt Web site (www.macfixit.com).

Give the Finder a Boost

DO YOU HAVE A WISH LIST OF FEATURES you'd like to add to the Finder? Your wishes may already have been granted. A collection of freeware and shareware patches enhances the power of the Finder.

Although none of these patches are exactly alike, they have significant overlap. For example, they all add ⌘-*key* shortcuts (such as ⌘-T for Empty Trash) to the Finder's menus. It's best to select the one that best suits your needs and use only that patch. Also, follow the directions that come with these patches *very carefully*— otherwise, the Finder may crash at start-up. (You can find links to all the patches mentioned here at www.macworld.com /1999/10/secrets/ or www.macfixit.com.)

Chakaranda's Mac OS 8.6 Finder Patch, Jon's OS 8.6 Mods, and **Finder 8.6 Patch** all primarily add assorted ⌘-*key* shortcuts to the Finder's menu. Jon's OS 8.6 Mods and Finder 8.6 Patch go a step further, adding a Finder Quit command. You can use this command to quit the Finder similarly to the way you quit any other application. The benefits are that it frees up extra memory and possibly regains memory lost to a "leak." If you quit all other open applications, the Finder will relaunch. As a bonus, you can hold down ⌘-option and rebuild the desktop without needing to restart the Mac.

Jerry's Finder 8 Patch combines almost all the features of the previous three patches and then heads off into new territory. It increases the memory allocation to the Finder (which may help reduce Finder crashes and let you keep more windows open). It also modifies the

Finder's naming schemes. For example, if you're tired of deleting the *alias* suffix from the name of every alias file you create, you can use this patch to keep the suffix from appearing.

8Tuner is more than a patch—it's an application that gives you complete control over which of its many options to install (see "Customize the Finder"). Among the options you can choose from are the Finder Menu Tuner, which lets you select your own ⌘-*key* shortcuts for Finder menu items, and Identity Tuner, which lets you change the text About This Computer in the Apple menu to anything you want, such as About Ted's G3 Speed Demon. And, like Jerry's Finder 8 Patch, 8Tuner enables you to change the default names of aliases, file copies, and untitled folders.

Customize the Finder If there's something about the Finder that you don't like, such as the way it names copied files (the option shown here) or its default ⌘-*key* shortcuts, 8Tuner will be happy to change it.

Secrets

Tips, Tricks, and Shortcuts

by Lon Poole

D o you need to reposition your icons every time you mess around with the resolution of your monitor? Instead of buying a shareware utility to reset your desktop-icon positions after switching resolutions (as suggested in June 1999's *Secrets*), you can quickly create an AppleScript application to do the job. Edouard Doubrovski, of Hanover, New Hampshire, was the first reader to contribute the following procedure. First, open the AppleScript Script Editor program. Then switch to the Finder, select all your permanent desktop icons (don't select a CD icon or any other icon that comes and goes from the desktop), and drag them as a group to a slightly offset position. Next switch to the Script Editor application and click the Record button. Switch back to the Finder by choosing it from the Application menu, which will ensure that the selected desktop icons remain selected, and drag the icons back to their former positions. Go back to the Script Editor once more, click the Stop button, and save the script as an application. Now you can reset your desktop icons by opening the application you just created.

Ensure Cable-Modem Security

Q. I recently got a cable modem. Although I have a dynamically changing IP address, I'm concerned about hackers. How can I stay secure?

TODD VAZIRI
Los Angeles, California

A. Security is indeed a real issue, as a cable-modem connection effectively makes your computer part of a local network consisting of all your neighbors who also have cable modems. If you have file sharing turned on, your computer will show up as an AppleShare server in the

Chooser of any neighbor who has a Mac and a cable modem. Your IP address is irrelevant, because file sharing uses the AppleTalk protocol, not TCP/IP. Likewise, an AppleTalk printer (such as a LaserWriter) that's connected to the same Ethernet hub as your cable modem will also appear in neighbors' Choosers. Neighbors with PCs and cable modems won't see your Mac or your printer unless they've installed software to enable Windows to use the AppleTalk protocol, such

Before · After

as the $199 PC MacLAN software, from Miramar Systems (www.miramarsys.com).

So how to protect yourself? Well, your first option is to turn off file sharing in the File Sharing control panel (the Sharing Setup control panel in Mac OS 7.6.1 and earlier)—then your Mac won't show up in anyone's Chooser. You can also turn off your AppleTalk printer when it's not in use, and it likewise won't be accessible to others.

However, if your Mac is connected to an Ethernet network with other Macs in your home or office and you need to have

file sharing turned on, double-click the Guest icon in the Users & Groups control panel and make sure guest connections are disabled. Make sure to do this on all Macs that are connected to your Ethernet network. With guest connections disabled, users will need to know a valid user name and password to connect to one of your networked Macs that has file sharing turned on. Set up user names and passwords in each Mac's Users & Groups control panel.

Another option is to isolate AppleTalk services such as file sharing from your neighbors' cable modems. You can do this by installing a second Ethernet port on one Mac, together with Internet gateway software such as the $54 SurfDoubler and $155 SoftRouter Plus, from Vicomsoft (www.vicomsoft .com), or the $89 IPNetRouter, from Sustainable SoftWorks (www.sustworks.com). Then connect your cable modem to the second Ethernet port and connect the built-in Ethernet port to your hub. You can also use a hardware gateway that has dual Ethernet ports, such as the $495 SonicWall, from Sonic Systems (www.sonicsys .com). The gateway hardware or software forwards Internet traffic but not AppleTalk traffic between the two Ethernet ports and enables all network computers to share the Internet connection.

Snap and Scroll in Photoshop

TIP If you're working in Adobe Photoshop (versions 3.X to 5.0) and have palettes scattered all over your screen, you can snap them against the *continues*

GENE GREIF

nearest edge of the screen by shift-clicking their title bars.

Also, while zoomed in on an image, try scrolling with the oft ignored page up, page down, home, and end keys. Press the shift key while pressing page up or page down to scroll exactly 10 pixels instead of a screenful. In Photoshop 5.0, you can also scroll left and right by pressing the ⌘ key in conjunction with any of these page-up or page-down shortcuts.

JEFF GRANDON
Bath, New York

Revisit Your Local Host

The trick for visiting your Personal Web Sharing Site by typing **localhost** in Microsoft Internet Explorer's address field (mentioned in July 1999's *Quick Tips*) prompted several readers to describe other methods that should work with all browsers and Internet-client applications. Brian Ashe, of Orlando, Florida, was the first to suggest typing 127.0.0.1 into your browser's location box. This IP address is the TCP/IP standard for accessing a server on the same machine as the client. If your computer is running additional TCP/IP servers or a server with more features than Personal Web Server, you can preface that IP address with a prefix such as ftp://, http://, or telnet:// to reach the desired service. Orya Blu-

menfeld Girton, of Cambridge, England, points out that the address 0.0.0.0 should also work.

Michael Shafae, of Belmont, California, doesn't like typing IP addresses, so he creates a hosts file in SimpleText to define names that refer to the appropriate IP addresses. Then he sets the TCP/IP control panel to Advanced mode, by choosing User Mode from the Edit menu; clicks the Hosts button that appears in the upper-right corner of the control panel; and selects his hosts file from the dialog box that appears.

Here's an example of a hosts file:

```
localhost  CNAME  pm7100.mydomain.net
pm7100     CNAME  pm7100.mydomain.net
g3pb       CNAME  g3.mydomain.net
pm7100.mydomain.net  A   127.0.0.1
g3pb.mydomain.net    A   192.168.6.5
```
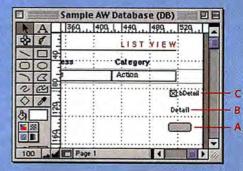
This file has two kinds of definitions. Each line containing *CNAME* links the nickname (at the beginning of the line) to the full name (at the end of the line). Each line containing an *A* specifies the IP address for a full name. The three parts of each line are separated by tabs or spaces. This example file specifies that the three names—localhost, pm7100, and pm7100.mydomain.net—all refer to the computer whose IP address is 127.0.0.1, which is the computer with this hosts file. This file additionally specifies that the two names g3pb and g3pb.mydomain.net refer to the computer whose IP address is 192.168.6.5.

Make AppleWorks Database Buttons

APPLEWORKS 5.0 (AND CLARISWORKS) DOESN'T HAVE A TOOL FOR MAKING buttons on a database layout, but you can make them with the following method devised by Jeffrey L. McLean, of Woodbridge, Virginia. In layout mode, either paste or draw a button graphic (**A**). If necessary, create a label for the button, using the text tool (**B**); move the label over the button graphic; and group them. Then define a check-box field (**C**) and move it over the button graphic. Resize the check-box field to fit just inside the edges of the graphic. Move the check-box field to the back so the button graphic covers it. You can hide the check-box field completely by making its pen pattern and fill pattern transparent and turning off its Show Label option, using the Field Info command.

To create action that happens when someone clicks the button, first record an AppleWorks macro that per-

Speak and Be Heard

Take heart, you iMac and G3 users who have tried in vain to surf the Internet by voice command as described in July 1999's *Quick Tips*. You need version 1.5.4 of Plain-Talk, Apple's speech-recognition software, which comes with Mac OS 8.6 (http://asu .info.apple.com/swupdates.nsf/artnum /n11386) and is also available separately (http://asu.info.apple.com/swupdates.nsf /artnum/n11400). PlainTalk 1.5.4 can use 44kHz sound input, the standard rate on iMacs and blue-and-white G3s; works with the iMac's built-in mic; and has other pluses that benefit many Mac models. **m**

LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. He authored *Macworld Mac OS 8.5 Bible* (IDG Books Worldwide, 1999) and coauthored *The Little Network Book* (Peachpit Press, 1999).
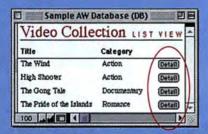
All shareware and freeware mentioned in *Quick Tips* is available from the Macworld Online software library (www.macdownload.com).

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forms the desired action. Then define a calculation field with a formula like this:
IF('bDetail',MACRO("Detail View"),MACRO("Detail View"))

Here, bDetail is the name of the check-box field and Detail View is the name of a macro that changes the layout.

Create

Master Streaming with QuickTime 4

HOW TO PRODUCE BOTH LIVE AND ON-DEMAND STREAMING MOVIES

by Jim Heid

When it comes to streaming audio and video over the Internet, there are two approaches you can use: you can deliver files with the same old HTTP server that delivers your Web pages and graphics, or you can use a streaming technology that provides real-time streaming for more-reliable and more-flexible results.

The HTTP method is easy and inexpensive, since you don't need any special server software (see "Watch This: Streaming Video on Your Web Site," *Create*, April 1998). But HTTP streaming has significant drawbacks. Besides being less reliable, it doesn't permit *seeking*—if users try to fast-forward to a particular spot, playback stops until everything up to that point downloads. Also, HTTP can't do live Webcasting, so it's unsuitable for special events such as live concerts or speeches and for radio or TV stations that want to expand to the Internet.

Until recently, QuickTime was an HTTP-only medium. But with version 4, QuickTime joins RealNetworks' RealSystem G2 and Microsoft's Windows Media Technologies (formerly Netshow) in providing support for true, real-time streaming.

QuickTime 4 streaming has a lot going for it. You can use most of the same tools and techniques you've been using to create HTTP-streaming QuickTime movies. And talk about flexibility: streaming QuickTime movies play back in any program that supports conventional, nonstreaming QuickTime flicks. Therefore, you can embed streaming QuickTime movies in a Macromedia Director project, a Microsoft PowerPoint presentation, or even a Microsoft Word document.

Although QuickTime isn't the best product for all users (it can be much

harder to use than RealSystem G2, and it lacks features that broadcasters and other professionals require; see the QuickTime 4 Pro review, elsewhere in this issue), it still has some advantages. It's inexpensive, making it well suited to educational institutions and budget-minded businesses. And because QuickTime streaming is part of the QuickTime architecture, you can do some slick things that you can't do with the competing products.

With this in mind, let's take a look at the QuickTime-streaming production process. Along the way, I'll pass along some production tips for both on-demand and live-event streaming.

I'm OS X, and I'll Be Your Server

You can create QuickTime 4 streaming movies on just about any Mac, but to

serve the movies, you need a Power Mac G3 running Apple's $495 Mac OS X Server software. Mac OS X Server includes a program, QuickTime Streaming Server, that dishes out streaming QuickTime movies.

This Mac OS X Server foundation is both an asset and a liability. On the plus side, Mac OS X Server is built on a rock-solid Unix foundation, which makes it more resistant to crashes and gives it greater multitasking abilities than the Mac OS currently provides—both critical components for true streaming.

But Mac OS X Server isn't nearly as easy to use as Mac OS 8.X. You don't have to know anything about Unix to be able to serve QuickTime streaming content and manage your server, but you may *continues*

RICHARD DOWNS

Create On-Demand Streaming Movies

PREPARING MOVIES FOR on-demand (as opposed to *live*) streaming is a multistep process. First, you compress the movie to accommodate your target bandwidth. This step is identical to preparing a movie for HTTP streaming or even CD-ROM playback. In this phase, you also *hint* the movie, a process that adds streaming data used by Quick-Time Streaming Server. You store the hinted movie in the default directory of QuickTime Streaming Server.
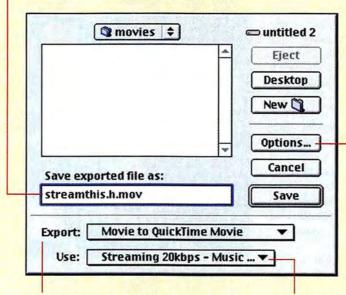
Finally, you create a *pointer file*, which sets up the dialogue between QuickTime Streaming Server and a user's Quick-Time Player or browser plug-in. You stash this pointer file on your HTTP server and link to or embed the file in your Web page.

Here's how to perform each step, using Apple's QuickTime Player (if you'll do a lot of streaming, do yourself a favor and get Terran Interactive's Media Cleaner Pro 4, which streamlines many of these chores).

Sizing and Compressing

For movies containing a video track, one of your first steps involves deciding on a final movie size and frame rate. For streaming to 28.8-Kbps modems, a typical size is a tiny 128 by 96 pixels or a slightly better 160 by 120, with a lowly frame rate of 2 or 3 frames per second (fps). That won't exactly yield a dramatic movie experience, but hey, these are modems we're talking to. If your movie contains very little motion, you might try a 192-by-144 frame size and 4 to 6 fps. If you are talking to 56-Kbps modems, you might try a 176-by-144 or 192-by-144 frame size, with 4 to 6 fps. And for ISDN and better connections, you can bump the frame rate up to about 10 fps.

When specifying compression settings for both video and audio tracks, you must choose data rates carefully, so as

You might find it helpful to add *.h* to the file name of your exported movie to indicate that the movie is hinted and ready for streaming. Be sure to end the movie's name with *.mov*, though.

To examine and tweak the compression settings for the preset you've chosen, click on Options.
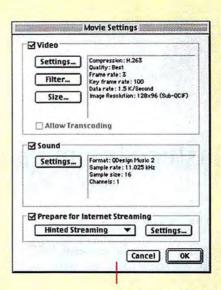
Be sure to choose Movie To QuickTime Movie.

Choose the desired preset from the Use pop-up menu.

not to exceed your target bandwidth. For example, to deliver a streaming movie to users with 28.8-Kbps modems, you will want to keep a movie's data rate to about 22 Kbps—this provides you some breathing room to allow for noisy connections. Consider a data rate of 12 Kbps to 14 Kbps for the video track and about 8 Kbps for the audio track.

You can use the Options button in the Export dialog box to specify data rates and frame rates by hand, but there's an even easier way. Apple has endowed QuickTime Player with a variety of presets for the most-common streaming scenarios. (These presets also add the hinting required for streaming.) The video settings use either the Sorenson Video or H.263 compressors, whereas the audio settings use the QDesign Music compressor for music or the Qualcomm PureVoice compressor for spoken audio.

Not everyone agrees with all of the settings choices that Apple made—for example, compression guru Jim Baker prefers the Sorenson Video compressor to the H.263 compressor Apple chose for several of the modem-oriented presets. Every compression scenario is unique, however, and Apple's presets

are a good starting point for your own compression adventures.

To export a movie for QuickTime streaming, just open the movie in Quick-Time Player and then choose Export from the File menu.

Create the Pointer File

Now you're ready to create the pointer file. This requires that you access the hinted movie through QuickTime Streaming Server, so be sure the server software is running. If you're running Mac OS 8.5 under Mac OS X Server, you can perform this step on the same computer that's running the server software. Or you can use any computer running QuickTime 4—including a Windows machine—as long as that computer has Internet or network access to the machine running QuickTime Streaming Server.

1. Choose Open URL from QuickTime Player's File menu.

2. Type the URL of your hinted movie (such as rtsp://yourserver/mymovie.h.mov) and press return. QuickTime Player will connect to QuickTime Streaming Server and begin streaming the movie. Let the movie play for a few seconds if you like, and

then click on QuickTime Player's stop button.

3. Choose Save As from the File menu. In the Save As dialog box, click on the Make Movie Self Contained button, name the movie, and click on Save. In doing so, you'll make a small (about 1K) movie that points to the hinted movie.

4. Copy this pointer file to your HTTP server (*not* to the machine running QuickTime Streaming Server), and then link to or embed the pointer file in your Web page.

Create Multiple-Data-Rate Movies

As mentioned in the main text, you can use a Quick-Time reference movie to access separate versions of a movie for various connection speeds. After compressing and hinting each movie, copy them to the Mac running Quick-Time Streaming Server. Next, create a pointer file for each movie, storing each pointer file in the same folder.

Finally, using Apple's free MakeRefMovie utility, assign each of the pointer files to its appropriate connection speed. Save the reference movie in the same folder as the pointer files, copy the whole shebang to your HTTP server, and link to or embed the reference movie in your Web page.

have to wade into Mac OS X Server to get streaming working in the beginning.

Of Streams and Bits

It's common practice to provide several versions of a movie or audio clip, each compressed for a particular connection speed. Since version 3, QuickTime has supported *multiple–data-rate* movies, which enable you to accommodate various connection speeds without having to litter a Web page with multiple links (see "Optimize Web Video for Quick-Time 3," *Create*, August 1998).

To recap briefly, when creating a multiple–data-rate movie, you have to make a separately compressed version for each connection speed and then create one *reference* movie that points to each version. Then you must link to or embed the reference movie in your Web page. To create reference movies, use either Apple's free MakeRefMovie utility (available from the Authoring area of the QuickTime Web site, at www.apple.com/quicktime/) or Terran Interactive's wonderful Media Cleaner Pro (www.terran.com).

These concepts apply to Quick-Time streaming movies, too. But there's one additional step: after compressing the final movie, you must create a small *pointer file* that sets up the conversation between QuickTime Streaming Server and a user's computer (see "Create On-Demand Streaming Movies"). If you've worked with Real-Networks' technology, you're familiar with this concept—in the Real world, this file is called a *metafile*.
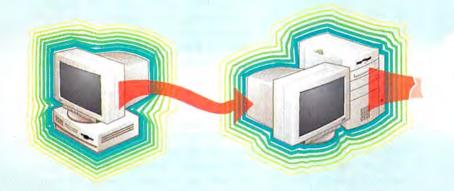
Let's Go Live
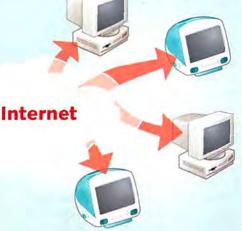
Being able to Webcast live streams is one of the best things about true, real-time streaming. QuickTime 4 delivers nicely, thanks to Sorenson Vision's $199 Broadcaster (www.s-vision.com). Broadcaster performs real-time encoding, compressing audio and video on the fly and then sending that single stream to a *second* Mac running Mac OS X Server and Quick-Time Streaming Server (see "Broadcasting with Broadcaster").

That's right: you need two computers to do a live Webcast with QuickTime 4. One computer, running Broadcaster under Mac OS 8.X, does the real-time compression, while the other, running QuickTime Streaming Server, serves the streams. You'll almost certainly want to

Broadcasting with Broadcaster

SETTING UP A LIVE QUICKTIME STREAMING BROADCAST INVOLVES RUNNING Sorenson Vision's Broadcaster on a Mac with OS 8.X (the *encoding* machine) and configuring that Mac to send a stream to a second Mac running QuickTime Streaming Server and Mac OS X Server.

Internet

ARNE HURTY

Mac OS 8.X running Broadcaster
Connect your video and audio equipment to the encoding Mac. (To encode video, you'll need a Mac equipped with video-digitizing hardware.)

QuickTime Streaming Server
In the configuration shown here, Quick-Time Streaming Server is being used as a *replication server*. It's taking the single stream supplied by the encoding machine and replicating it as multiple streams: one for each user who's listening to or watching your stream.

Internet users running QuickTime 4
To allow users to connect to your stream, you must create a pointer file for the stream and then link to or embed it in a Web page.

---

run Broadcaster on a G3-equipped Mac —in my tests, I successfully used a gray-haired Power Mac 7600 to live-encode a low-fidelity (voice-only) stream, but the computer was too slow to encode a stream of music.

What if you want to deliver multiple live streams for various connection speeds? You'll need multiple G3 Macs, each running a copy of Broadcaster that encodes for a different speed. Unlike RealNetworks' RealProducer G2 family of encoders, Broadcaster can't encode multiple streams simultaneously.

This multiple-Mac scenario sounds expensive, and indeed, it can be. But depending on your situation, it can still be less expensive than buying RealSystem G2 server software. For instance, the 100-stream RealSystem G2 server software costs $5,995. You can buy a few G3 Macs for that price—and be able to serve up to ten times the number of streams. For heavy-traffic live streaming, then, QuickTime's multiple-Mac requirement

isn't a significant drawback. (For lighter-traffic scenarios, though, the scale tips in RealSystem G2's direction.)

Tuning Out
When you look closely at QuickTime 4 streaming, it's clear that Apple is behind the competition in key areas. But that doesn't mean that QuickTime is out of the running—far from it. It has some unique assets that other streaming technologies lack. I've already mentioned one: the ability to embed streaming Quick-Time movies in any program that supports conventional QuickTime movies.

Another QuickTime advantage has to do with interactivity within movies. With tools such as Totally Hip Software's LiveStage (www.totallyhip.com) or Electrifier's Electrifier Pro (www.electrifier .com), you can create clickable buttons and hot spots *within* movies. With Quick-Time 4, these so-called *wired* movies can also stream. RealSystem G2's support for the Synchronized Multimedia Integration

Language (SMIL) also allows for powerful streaming interactivity, but SMIL is an HTML-like tagging language with a fairly steep learning curve. With Quick-Time, if you're creating wired movies for other media, such as CD-ROMs, you can use the same tools and skills to create wired movies for streaming.

So although QuickTime streaming may not outstream the competition in every area, it still has a lot going for it and is the right choice for some applications. It's definitely a technology worth watching—and listening to.

Special thanks to Jim Baker of Compression Factory (www.compressionfactory .com) for his insights and recommendations. For samples of video and sound he has compressed, visit the Apple Quick-Time Showcase page, at www.apple .com/quicktime/showcase/. **m**

A contributor to *Macworld* since 1984, JIM HEID (www.heidsite.com) writes, lectures, and consults on Web multimedia technologies.

Create

Web Graphics Made Easy

BEAUTIFY YOUR WEB SITE THE SIMPLE WAY WITH ADOBE IMAGESTYLER

by Tom Negrino

Everyone wants her or his Web site to look sharp, but the reality is that many of us building sites are not trained designers. Maybe you're in sales or marketing and the boss just gave you the responsibility of building the company Web site—with no budget for an artist. Or maybe you're just eager to express yourself on the Web and don't want to deal with the expense and steep learning curve associated with big graphics guns like Adobe Photoshop. If you need good results quickly and inexpensively, Adobe's $129 ImageStyler is just the answer for nondesigners trying to create a beautiful Web site.

The Beauty of Objects

Adobe released ImageStyler around the same time it released another Web-graphics program, ImageReady, and confused folks because the names are so similar. But the two programs are actually quite different, and one main reason is ImageStyler's object-based nature.

ImageStyler lets you work with objects and vectors, which are scalable and nondestructive (whereas Image-Ready and Photoshop let you work mainly with static bitmapped images; see the feature "Photoshop Discovers the Web," elsewhere in this issue, for more on Photoshop 5.5 and ImageReady). This means you can do things with ImageStyler that are impossible with Photoshop and ImageReady. For example, if you edit or transform an image by adding filters, rotating, or cropping and then change your mind, your original image will still be intact. You can edit without consequences, since you can revisit and change artwork anytime after the original session. ImageStyler encourages experimentation and doesn't punish you for trying new things.

Everything in ImageStyler is an object, whether it's a photo, a block of text, or a shape. You can apply styles to any object (a style is a combination of color, gradients, opacities, textures, and other effects), and an object can have up to five layers, each containing any combination of effects. Another bonus is that you don't have to laboriously create each graphic separately and then piece them together in a Web-page–layout program. You can create graphics and lay them out in the ImageStyler window and then just export the file; Image-Styler generates the individual graphics and the HTML file that defines the layout for the Web.
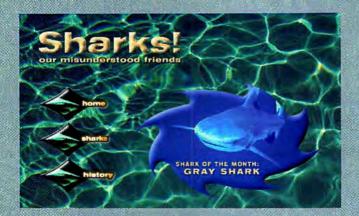
On the following pages, I outline two ways that ImageStyler excels for the nondesigner creating a Web site. You will learn how to construct attractive buttons that have different Java-Script rollover behaviors (see "Make Snazzy Rollover Buttons") and how to create nice-looking text (see "Create Instant Graphical Text"). (To learn an additional technique—how to composite custom-shaped images—go to www.macworld.com/1999/10/create/.)

Even though ImageStyler is designed for the casual artist, professionals will also find it a handy addition to their arsenal. It allows you to quickly apply effects to images and text, and you can save ImageStyler compositions in Photoshop format for further tweaking. If you create graphics for the Web, ImageStyler should be part of your tool kit. **m**

Contributing Editor TOM NEGRINO is a coauthor of *JavaScript for the World Wide Web, Visual QuickStart Guide*, third edition (Peachpit Press, 1999).

continues

MAKE SNAZZY ROLLOVER BUTTONS

CREATING NAVIGATION BUTTONS —even making simple effects like drop shadows—in Photoshop can take quite a bit of time and expertise, and there's no easy way to quickly try out a series of effects. This is where ImageStyler really shines. You can create custom button shapes using the tool palette or pick one of the dozens of shapes included in the Shapes palette. If none of those shapes fit your needs, you can import any EPS graphic (such as an Adobe Illustrator or Macromedia FreeHand file) and store it in the Shapes palette. Then you can dress up the shape using ImageStyler's Textures and Styles palettes.
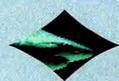
ImageStyler also takes all the pain out of adding Java-Script rollovers to your buttons. Not only does it write all the JavaScript code for you, but it also treats the rollover action as just another attribute of the button object. That means you can move, copy, or edit the object as you wish without having to readjust the rollover effect. When you're ready to publish your Web page, ImageStyler exports an HTML file that includes all of the Java-Script required to make the effects work. Here's how I made the buttons for my sample site, "Sharks!"

1. I wanted to make buttons with sharks on them, so I dragged an EPS file of a shark from the Finder into ImageStyler's drawing window. I scaled the image using the selection handles. I chose the diamond shape from the Shapes palette and then clicked on the Matte button at the bottom of the palette.

To create three buttons, I selected the one I had made and chose Edit: Make Alias two times. Since they're aliases, changes made to any button will be reflected in all three.
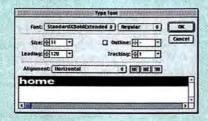
2. I dragged the three buttons into a rough vertical stack, and evened out the spacing by selecting all three and choosing Object: Align: Horizontal Centers, followed by Object: Distribute: Vertical.

To add a style to the three buttons, I selected one of them, found a style I liked in the Styles palette, and clicked on the Apply button. All of the buttons updated simultaneously.

3. Next I selected the text tool and clicked in the document window. In the Type Tool window, I typed the button text **home** and set the font, style, and size. I wanted the text to be highlighted when a Web surfer's cursor rolled over the button, so I turned to the JavaScript palette.

4. In the JavaScript palette, the basic state of an object is noAction. To create a new state, I clicked on the New button at the bottom of the palette, which activated the onMouseOver state (see "What Does That Code Mean?").
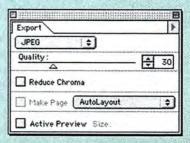
Using any of Image-Styler's tools, you can change the appearance for the onMouseOver state to a different color, style, gradient, texture, shape, size, or position. To add a URL to a state, enter the URL in the Web palette. To add onMouse-Down or onMouseOut states, repeat the above.

5. After I got the first text object looking just the way I wanted it to, I chose Edit: Duplicate and changed the duplicates' text to *sharks* and *history*. Then I dragged each text object over its respective button. Under Window: Export, I selected a graphics format (you'll usually want GIF or JPEG) and chose AutoLayout.

When I chose File: Export, ImageStyler rendered the button images and created an HTML file, including all of the JavaScript needed to make the button rollovers work.

CREATE INSTANT GRAPHICAL TEXT

ONE OF THE COOLEST FEA- tures of ImageStyler is its ability to read an HTML file, apply an ImageStyler template, and turn text that's tagged with an HTML headline style into antialiased graphical text. This is a great way to dress up your site. You can use the technique to make sharp-looking buttons and navigation bars, as well as spiced-up headline text. Here's how to do it.

1. First, make the graphical template in ImageStyler. To do this, create a text object and style it as you wish. It doesn't matter what the text says, because it will be replaced by text from the HTML file. To tell ImageStyler that the text is meant to be replaced, select a replacement heading such as H2 from the Web palette. If the replacement text is on top of a shape (as it would be for most buttons), ImageStyler will render the text object and the shape together when the replacement takes place.

2. Next, create the HTML content. Open an HTML editor such as BBEdit, type in the headlines, and tag them with Heading 2. The text should look like this:
    <H2> Shark Facts</H2>
    <H2> Spotlight on Species</H2>
    <H2> FAQ's</H2>
Then save the document with a name like replace.html.
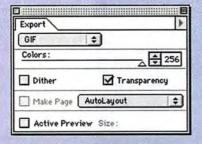
3. Now go back to ImageStyler, choose Window: Export, and pick the graphics format that you want.
TIP: If you choose GIF, hold down the shift key while dragging the Colors slider, and the number of colors snaps from 256 to 128 to 64 and so on.

4. Now choose File: Batch Replace HTML and select the replace.html file. ImageStyler will then render as many images as you have tagged and rewrite the replace.html file to reference the new graphics files. It will also automatically create a copy of the original replace .html file and re-name the original replace.old.

If you open the replace.html file in a browser, you'll see the new graphics, as shown here.

What Does That Code Mean?

IF YOU'RE NOT FAMILIAR with JavaScript events, the terminology can be a bit confusing. Here's what the different events mean.

onMouseOver The chosen effects happen (for example, the button changes from blue to yellow) when a Web surfer rolls the cursor *over* the object.

onMouseOut The chosen effects happen when a Web surfer's cursor rolls *off* the object.

onMouseDown The chosen effects happen when a Web surfer *clicks on* the object.

Create

Make Your Pictures Move

SHAKE UP STILL PHOTOS WITH MOTION EFFECTS

by Mike Wooldridge

One of the many freedoms that digital-image manipulation offers is the capability to depict motion without need of a video camera. You can give the feeling of movement and the impression of passing time in a single image by using digital effects, a combination of still images, and your imagination.

Chicago-based photographer Jeff Schewe used digital techniques to add a temporal twist to an image of a long jumper in flight. By compositing seven photos—which were shot with a motor-driven, film-based camera—and applying subtle Adobe Photoshop effects to blur the trailing edges of the jumper's body, he conveys the feel of a short movie clip in a single image.

The long-jump piece, designed for a Motorola marketing brochure, is typical of Schewe's photo-realistic style. He prefers to scan his photos at very high resolutions and then work with the high-res files in Photoshop. For this image, he took dozens of photos in his studio of a man jumping, picked the best ones to create a cohesive series of motion, and applied masking techniques and blur effects in Photoshop.

Schewe also tries to retain the fine detail associated with film in his digital creations. Here, he added an extra layer atop the images to recover some of the grainy texture present in the original film but lost during the Photoshop manipulation. As a result, the final image doesn't appear digitized, even at close range.

Because the Photoshop files, with all their layers, can be as large as a gigabyte, Schewe's computer has to pack a lot of power. For this project, he used a Day-Star Genesis Mac clone with a 400MHz Newer G3 upgrade and 1GB of RAM. Schewe also uses an Imacon FlexTight Precision II scanner, plus a Seagate Sidewinder AIT tape drive for archiving his supersize projects. He shot the original photographs with a Canon EOS-1N RS 35mm camera. His primary software tool is Adobe Photoshop 5.0. **m**

MIKE WOOLDRIDGE (mike@thatguy.com) is a freelance writer and new-media artist.
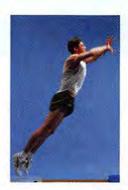
Get Moving Schewe's final image is the result of compositing the best seven images out of dozens of photographs and applying blur effects to enhance the look and feeling of motion. The interplay between sharp and blurred edges—which gives the piece its real impact and movement—would have been difficult to achieve by camera alone.

JEFF SCHEWE

1 The long-jumper image combines both outdoor and indoor photographs. Schewe first shot photos of the runway and sandpit outside at a track-and-field stadium on a misty day.
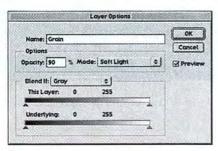
2 He then photographed the long jumper in front of a blue screen in his studio, using a motor-driven camera that captured the action at 6 frames per second. Schewe took many photos of the model jumping and then mixed and matched shots from the different takes to get seven sequential images that fit together aesthetically. He scanned the seven chosen photographs at 3,200 dpi, brought each one into its own layer in a Photoshop file, and masked the jumper from the blue background so he could swap in the misty background.
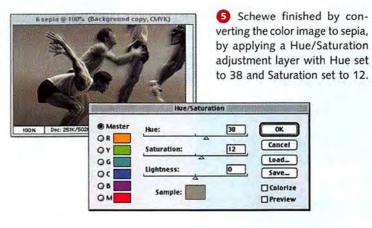
3 To accentuate the appearance of motion in the images, Schewe added blur at the edge of the jumper's body. He did this by duplicating each frame, lowering each duplicate's opacity, and then staggering the duplicates underneath and to the left of the original frames. This added a faint blur trailing each image of the jumper while leaving the sharp details of the jumper's body intact.

4 The Photoshop manipulation caused some of the original photos' graininess to drop out. To recover it, Schewe created a grainy gray layer, set the layer to Soft Light and Blend If: Gray in the Layer Options dialog box, and added the layer on top of the composite image.

5 Schewe finished by converting the color image to sepia, by applying a Hue/Saturation adjustment layer with Hue set to 38 and Saturation set to 12.

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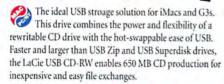
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Sony MVC-FD88 Digital Mavica Cameras

- Convenient digital cameras capture photos and video
- Store and transfer content on standard floppy disks
- Add images and multimedia to presentations, Web sites

The new FD88 grabs 1.3Megapixels for larger, print-quality images. You also get professional features like 3-mode auto exposure, manual exposure, flash and self-timer. To really get up close and personal, the FD88 offers 8X zoom capabilities. And you can record up to 15 seconds of presentation-quality MPEG video or 60 seconds for a video e-mail. Why not add some multimedia to your business? Pick up a Sony Digital Mavica Camera today.

SONY MVC-FD88 $899.95
SONY MVC-FD83 $699.95

Adaptec Ultra HotConnect 8945

- Connects both digital video camcorders and Ultra Wide SCSI devices to your computer using only one PCI slot
- Includes DV capture software, FireWire and SCSI cables/connectors

This PCI card lets you connect your digital video camcorder to your Mac or PC on the same slot as your SCSI drives. You can chain up to 62 IEEE-1394/FireWire devices and up to 15 SCSI devices, like Ultra Wide SCSI hard drives, CD recorders, Jaz and tape devices. This awesome package includes a complete set of SCSI and 1394/FireWire cables and connectors, plus digital video capture software.

ADAPTEC 8945 $539.95

Canon ELURA Digital Video Camcorder

- Palm-sized DV Camcorder with Canon 12X optical/48X digital Zoom lens
- Noise reduction and Optical Image Stabilizer give you top quality footage

Now, you can get the power of digital video and the precision of Canon, all in the palm of your hand. The ELURA sports all of the advanced capture features of Canon's larger camcorders. You get crystal-clear digital video, with intricate details and true colors. The progressive scan CCD captures much better quality images than other, interlaced CCD camcorders. With up to 500 lines of horizontal resolution, you get 20% better-than-analog quality. Automatic or manual controls satisfy both the beginner and veteran. Plus, you can easily add your own personal touch to your video using the faders, effects, and a multi-image screen. So get the power of the Canon ELURA in the palm of your hand today.
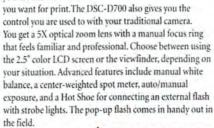
CANON ELURA $1,299.95

Sony DSC-D700 Digital Camera

- 1.5Megapixel images (1344 x 1024) for top-quality print projects
- 5X manual optical zoom, equivalent to f28mm to 140mm zoom lens on a 35mm camera
- Includes Type II PC Card and reader for easy transfer to desktop computer

Professional photographer for print? You may think that digital photography just doesn't have the quality or flexibility of your SLR camera. Well, now it does. Introducing the Sony DSC-D700 Digital Camera. This powerful device captures 1.5 million pixels per image to give you the kind of resolution you want for print. The DSC-D700 also gives you the control you are used to with your traditional camera. You get a 5X optical zoom lens with a manual focus ring that feels familiar and professional. Choose between using the 2.5" color LCD screen or the viewfinder, depending on your situation. Advanced features include manual white balance, a center-weighted spot meter, auto/manual exposure, and a Hot Shoe for connecting an external flash with strobe lights. The pop-up flash comes in handy out in the field.

SONY DSC-D700 $1,699.95

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Steven Saves the Mac

INSPIRED BY ERNEST LAWRENCE THAYER'S "CASEY AT THE BAT"

STEVE JOBS GAVE HIS recent Macworld Expo keynote iCEO speech exactly two years after his first in 1997, when he had just rejoined Apple as its newest leader. In those two years, he's turned Apple, then a condemned property, into a hot, thriving, profitable company—a feat that all agreed was impossible. If you've ever read the classic poem "Casey at the Bat," you can't help but notice a few parallels . . .

The outlook wasn't brilliant
For the Apple team that year;
Its market share was down to four;
The end, they thought, was near.
When revenues went up in smoke,
And laptops did the same,
The die-hard fans themselves
Began to look away in shame.

A straggling few abandoned ship
For Windows. But the rest
Clung to the hope which
        springs eternal
In the human breast;
They fantasized that Steve Himself,
Evicted long ago,
Might somehow have a crack at being
Savior/CEO.

But "Diesel" Spindler had the job,
And Gil came after him;
The former was a washout,
And the latter way too grim;
So on the stricken multitudes,
Dark melancholy sat,
For no one thought that Steven Jobs
Would get a chance at bat.

But Diesel blew it big time,
And was ousted by the board,
And Gil, with golden parachute,
Abruptly pulled the cord.
And when the dust had lifted,
And they saw what had occurred,

Now Steve was back at Apple's helm:
The triumph of the nerd!

There was ease in Steven's manner
As he stepped into his place;
There was pride in Steven's bearing
And a smile on Steven's face.
The kid who'd started Apple
With a vision in his teens
Was once again a superstar—
In turtleneck and jeans.

The media was scornful
As he formed the board anew;
The faithful screamed in protest
As he axed the Newton, too.
And now he's on the
        Expo stage,

And now the world awaits,
And now he tells the world he's made
A deal with William Gates!

The crowd went wild with anger;
There went up a muffled roar,
Like the beating of the storm-waves
On a stern and distant shore.
"Let's kill him! Kill the traitor!"
Shouted someone, red with rage;
And it's sure they would have killed him
Had he not been up onstage.

"My friends, you know not what you say,"
Began the fabled man,
"I still think Apple can be saved—
I've got a secret plan!"
Reporters scoffed. They shouted back:
"No matter what you say,
You cannot run a company
Without an MBA!"

But then there came the iMac:
Steven's baby, Bondi blue;
As sales and shipments rocketed
The stock quadrupled, too.
The profits Apple took in now
Were not to be believed—
No wonder; frills like free support
And floppies had been "Steved."

The ugly beige of yesteryear
Was next in line to go;
The Power Macs, in shades of blue,
Made Pentiums look slow.
And ads, and games, and USB . . .
He cleaned up Apple's house.
Each choice he made was brilliant!
(Well, except the iMac mouse.)
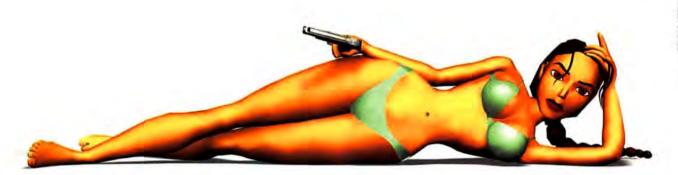
Then one by one, the pundits
Started eating public crow;
The Apple-bashing know-it-alls,
It turns out, didn't know.
Soon buying Macs was cool again,
And cutting-edge, and smart—
As Microsoft got stuck in court
And Compaq fell apart.

Oh, somewhere in this favored land,
The market share is low,
The red ink's flowing somewhere,
And somewhere sales are slow.
And somewhere critics slaver,
And somewhere moods are black;
But by God, there's joy at Apple—
Steven Jobs has saved the Mac! **m**

DAVID POGUE (www.davidpogue.com) cowrote *Macworld Mac Secrets*, fifth edition, and authored *The iMac for Dummies* (both from IDG Books Worldwide, 1998).

PETER HOEY

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